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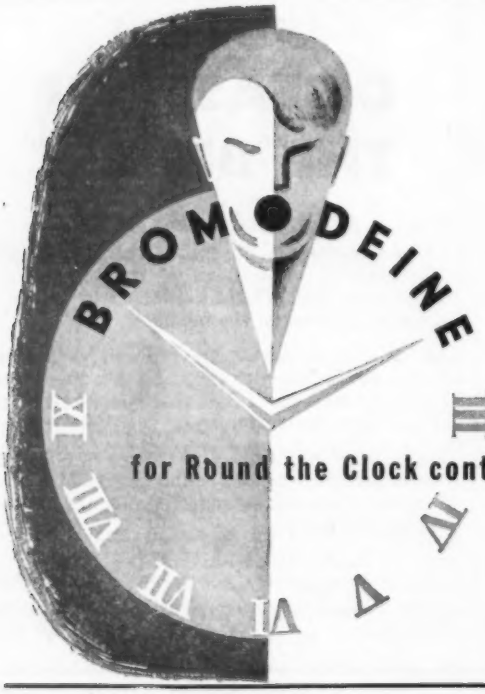

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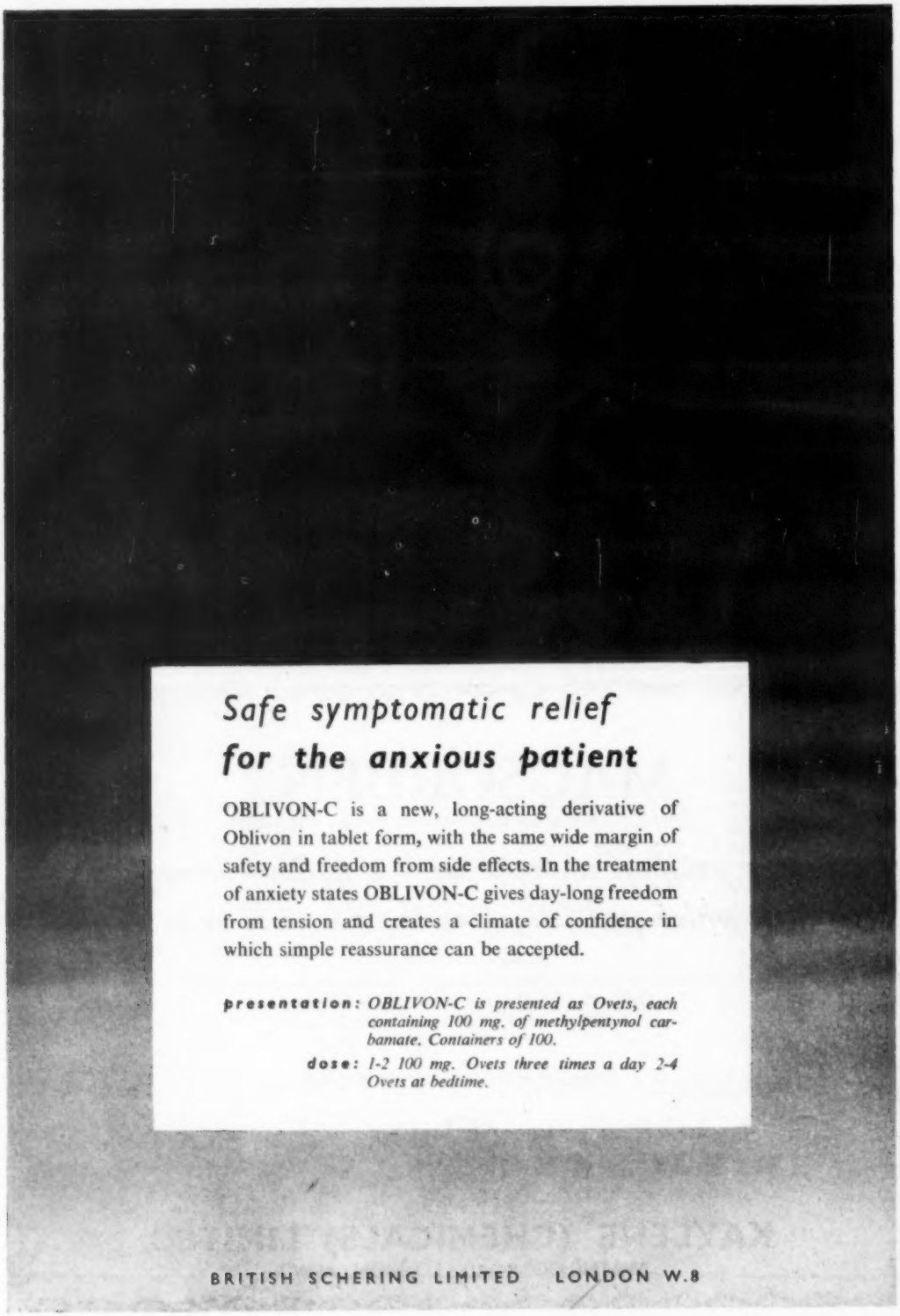
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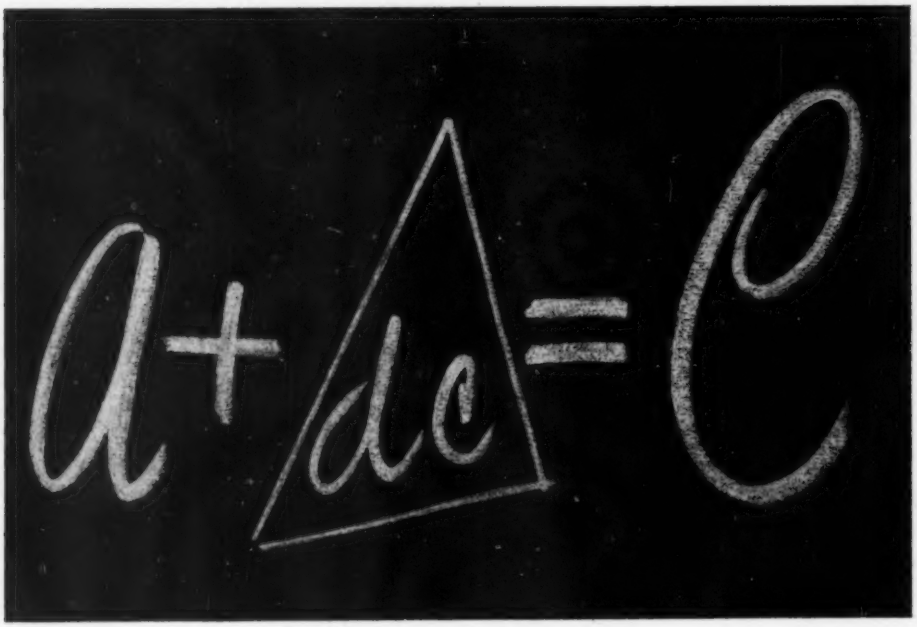

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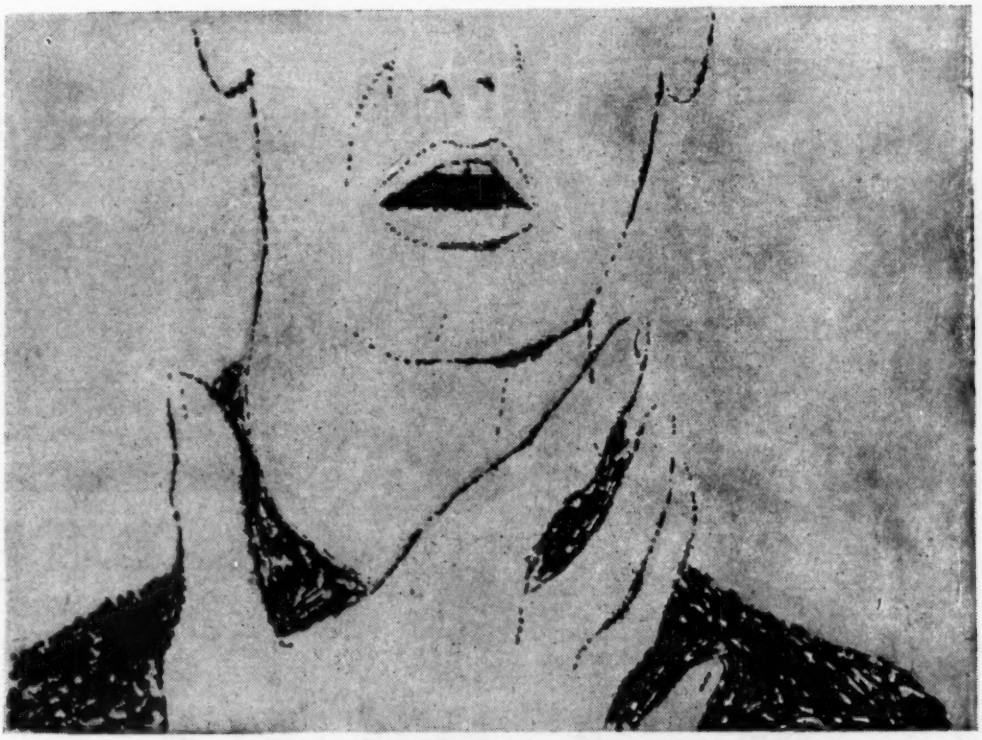

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This quality, combined with the fact that patients do not become sensitized to tyrothricin, ensures that it will remain a most effective oral antibiotic in cases of stomatitis, tonsillitis, and as a prophylactic against influenza and other throat infections.

Active principles: Tyrothricin 1 mg., benzocaine 5 mg.

Dose: One lozenge every hour till relief is obtained, then 1 lozenge every 3 hours.

Packing: Packs of 20 lozenges. Dispensing bottles of 250 lozenges supplied to chemists.

WARNER

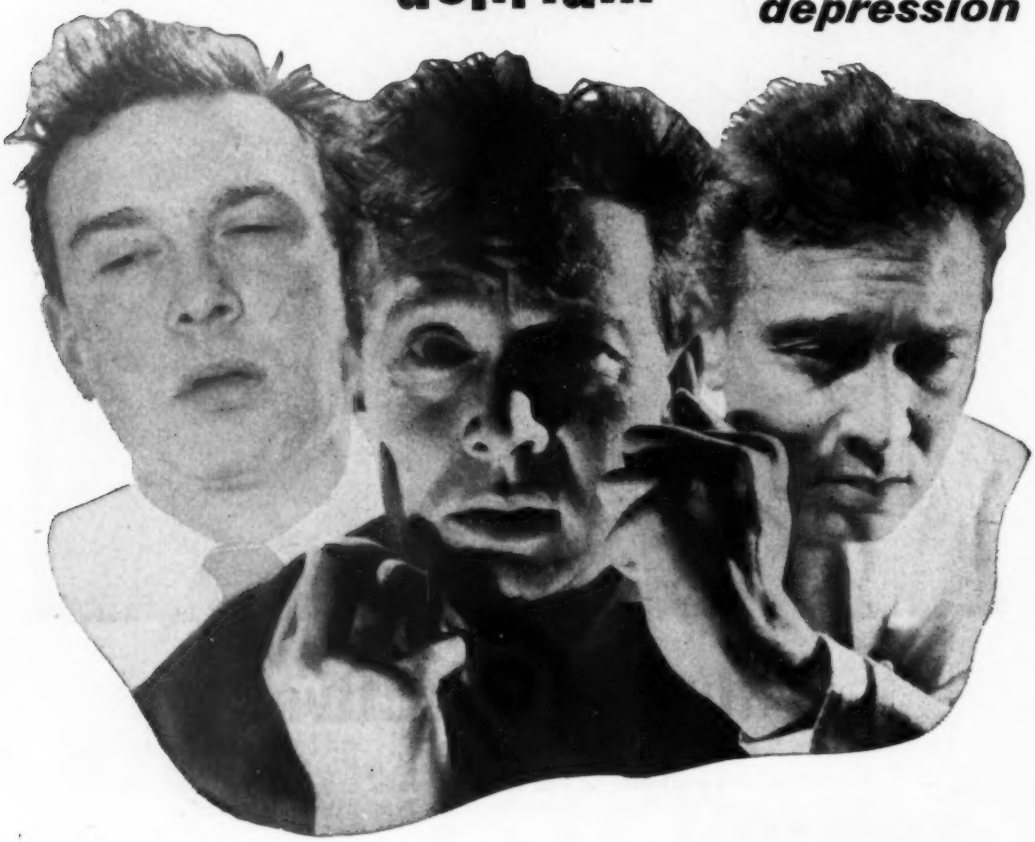
Tyrosolven

TRADE MARK

WILLIAM R. WARNER & CO. LTD · POWER ROAD · LONDON, W.4.

9

In coma **delirium** *depression*



PARENTROVITE

injectable B complex with vitamin C

A massive dose of injectable B complex with vitamin C . . . to restore normal cerebral functions in toxic states due to narcotic or barbiturate drugs, alcohol, or acute infections.

In boxes of 3 pairs of ampoules. *Hospital pack also available.*

A preparation **OROVITE,** containing the same B complex vitamins in high concentration for oral administration, is also available. *In tablets and elixir.*

Two groups of preparations containing the vitamin B complex in less massive concentration are: **BECOVITE & BEFORTISS.** *In tablets, ampoules and elixirs.*

VITAMINS LIMITED (DEPT. B.13), UPPER MALL, LONDON, W.6.

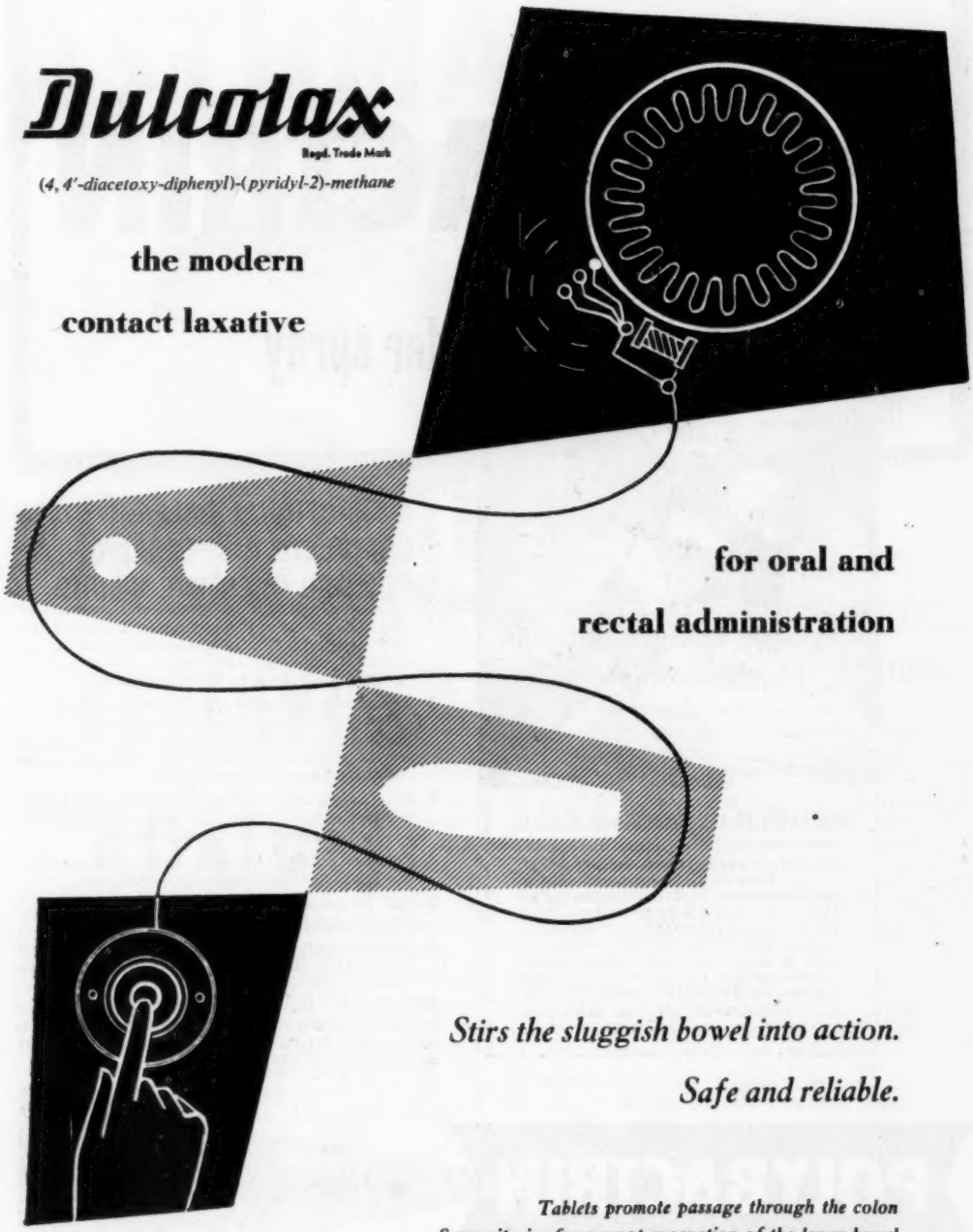
Dulcolax

Regd. Trade Mark

(4, 4'-diacetoxy-diphenyl)-(pyridyl-2)-methane

the modern

contact laxative



for oral and

rectal administration

Stirs the sluggish bowel into action.

Safe and reliable.

Tablets promote passage through the colon
Suppositories for prompt evacuation of the lower bowel

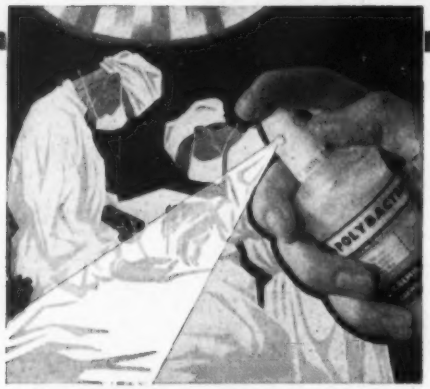
Dulcolax enteric coated tablets of 0.005 g. · Bottles of 30 and 200
Dulcolax suppositories of 0.01 g. · Boxes of 6 and 50

LEWIS LABORATORIES LTD., LEEDS 9

11

POLYBACTRIN

antibiotic powder spray



INVALUABLE IN ALL BRANCHES OF SURGERY

Polybactrin provides a unique and economical means of applying a combination of Zinc Bacitracin, Neomycin Sulphate and Polymixin 'B' Sulphate—the three antibiotics of choice for topical use. The antibiotics are presented in an ultra-fine powder form dispersed under pressure with a propellant, and unlike other means of powder insufflation in common use, there is no risk of contamination of the antibiotics by airborne pathogens obtaining entry into the unit by suction.

A FRACTIONAL RELEASE GIVES COMPLETE DISPERSAL OF POWDER OVER THE WOUND

1. The *Polybactrin* unit offers a new technique for topical application of antibiotic therapy, enabling an efficient, economical and dry coverage of the wound area to be made.
2. The extensive range of bactericidal activity afforded by the triad of bacitracin, neomycin and polymixin gives an extremely wide coverage of wound pathogens without the risk of inducing resistant strains of organisms.
3. Ps. pyocyaneus, particularly present in burns, is completely inhibited by polymixin, considerably reducing the healing time.
4. *Polybactrin* is not readily absorbed and there is no risk of systemic toxicity occurring.
5. The propellant gas is non-toxic and does not support combustion.
6. There are no contra-indications to the use of *Polybactrin*. Systemic therapy may be given concurrently if necessary.

FORMULA: Each pack contains: Neomycin Sulphate 750 mg. Polymixin 'B' Sulphate 150,000 units. Zinc Bacitracin 37,500 units. Propellent 83.5 g. Net contents 85 g.

POLYBACTRIN antibiotic powder spray

Supplies initially for Hospitals only—no samples available

CREWE: *Telephone: Crewe 3251-5*

CALMIC LIMITED

LONDON: *2 Mansfield Street, W.1 Tel: LANgham 8038-9*

AUSTRALIA: 458-468 Wattle Street, Ultimo. Sydney, N.S.W. **CANADA:** Terminal Building, York Street, Toronto

P1

ASTHMA

RYBROL

relieves anxiety

To alleviate the anxiety state so characteristic of asthmatics, Rybar Laboratories have produced a new tablet in which five ingredients combine to achieve the desired result.

Rybrol Tablets contain ephedrine which so dramatically relieves the asthmatic spasm; phenobarbitone for its sedative action; and three drugs of special value in the treatment of asthma—theophylline, dexamphetamine sulphate and phenethylamine citrate.

Rybrol is the outcome of prolonged research and specialised knowledge of the problems associated with the treatment of asthma.

Samples and further information on request.

There is a comprehensive range of efficient RYBAR remedies for ASTHMA

RYBARVIN INHALANT Non-habit forming antispasmodic for the treatment of asthma. Gives consistent and often spectacular results. Free from excess acidity and non-irritant. No side effects.

RYBAREX INHALANT Similar to Rybarvin but also has a strong expectorant action which makes it the inhalant of choice when Bronchitis and Bronchial Catarrh complicate the asthma.

NEO-RYBAREX An antispasmodic similar to Rybarex but incorporating a detergent aerosol. Particularly valuable where there is excessive or thickened secretion.

RYBRONSOL POWDER A sedative which, when taken by the mouth, soothes the general nervous system, helps to relieve the bronchial spasm and alleviates congestion in the bronchial tree.

RYBROL TABLETS A new Rybar sedative in tablet form for relieving "Anxiety State", especially in Asthma.

RYBADET AEROSOL A detergent aerosol for use in bronchiolitis and other respiratory affections associated with excessive or thickened secretion.

RYBAR INHALER Specially designed for aerosol therapy.

All products may be prescribed on E.C.10.

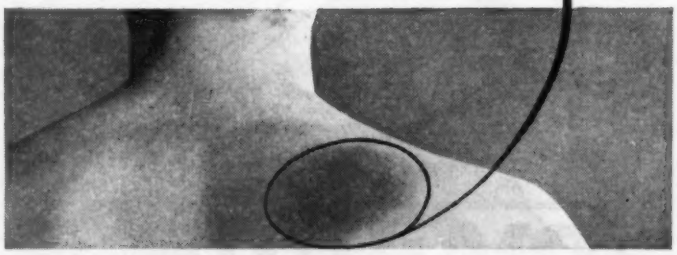
RYBAR LABORATORIES LTD.

TANKERTON KENT

PB 23

Rubriment relieves pain in such conditions as muscular rheumatism, fibrositis, strains and sprains.

Some minutes after application the skin becomes flushed and there is a comforting feeling of warmth which persists for many hours.



RUBRIMENT

A new long-acting rubefacient—safe and effective

Rubriment is a product of original research.

For some years it has been known that some chemicals when applied to the skin produce redness and warmth. Rubriment is based on a new substance, the benzyl ester of nicotinic acid, which has been demonstrated to give a long-lasting rubefacient effect without any damage or irritation to the skin even after prolonged and repeated application.

Ten minutes after application of Rubriment there is a comforting feeling of warmth and the area is seen to be flushed. This redness is due to the dilatation of the small cutaneous blood-vessels. This persists, without danger of irritation to the skin. Clinical reports have been received of the efficacy of Rubriment for the relief of pain in such conditions as muscular rheumatism, lumbago, fibrositis, strains and sprains. The immediate and prolonged vasodilatory action of Rubriment also provides effective relief for unbroken chilblains.

Whenever counter-irritation is indicated, Rubriment is the preparation of choice for the patient.

Available in two forms

Rubriment (2.5% nicotinic acid benzyl ester and 0.1% Capsicin) is available either as a cream or as a liniment, both of which are non-greasy.

The cream is rapidly absorbed and needs only gentle application. *It is supplied in tubes of* 20 *g.* (*Approx.*). *BASIC PRICE to N.H.S.*, 2/2*d*.

The liniment lends itself to massage, if this is required. *It is supplied in bottles of* 2 *fl. ozs.* (*approx.*). *BASIC PRICE to N.H.S.*, 3/-.

Directions for use Apply Rubriment to the affected area. As Rubriment causes a stinging sensation in contact with the eyes and face, the hands should be well washed after use.

One application per day has been found to be effective for the majority of patients, though a fresh application may be made, if necessary, at more frequent intervals.

Rubriment is not advertised to the public and can be prescribed on form E.C.10.

RUBRIMENT

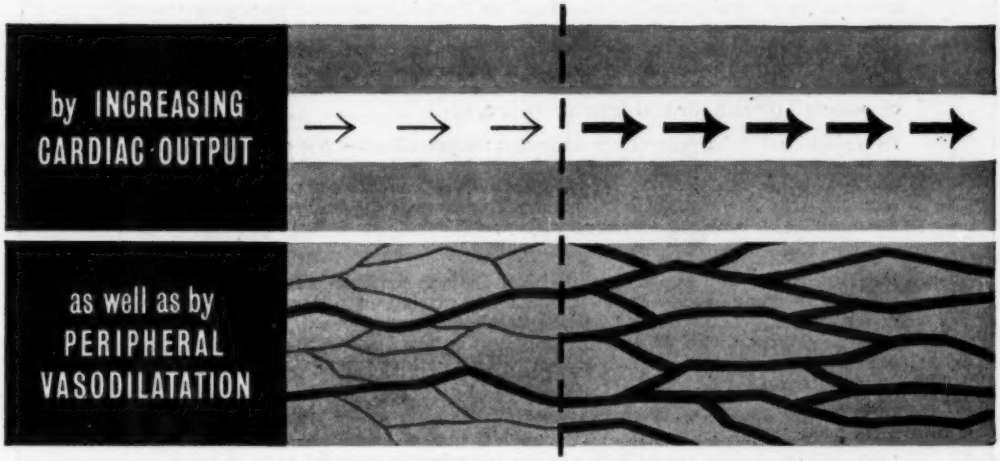
Horlicks Limited, Pharmaceutical Division, Slough, Buckinghamshire

Arch. Derm., 1951, 192, 423. Z. ges. inn. Med., 1953, 8, No. 3, 99. Hautarzt, 1952, 3, No. 7, 304. Hippokrates, 1950, 14, 378. Derm. Wschr., 1950, 122, No. 37. Schweiz. med. Wschr., 1950, 80, No. 44, 1180. Munch. med. Wschr., 1951, 93, No. 44, 2209. Ther. Gegenw., 1952, 91, No. 9, 344. Dtsch. Gesdh. Wes., 1950, 5, No. 49, 1953. Derm. Wschr., 1951, 123, No. 7, 145.

PERDILATAL*

TRADE MARK

increases muscle blood flow



PERDILATAL is unique among vasodilator substances in its two-fold action. It not only dilates the blood vessels of the deeper tissues; but at the same time it causes an increase in the minute volume of the heart. This combined increase in effective peripheral vasodilatation and cardiac output results in a preferential muscle blood flow increase, together with a slightly greater cutaneous flow.

Published work in this country and abroad (1) Lancet, 1956, **1**, 257, (2) Angiology, 1955, **6**, 190, (3) Angiology, 1955, **6**, 271, (4) Angiology, 1954, **5**, 314, indicates the value of Perdilatal in the treatment of intermittent claudication and associated vascular disorders. Perdilatal is a valuable addition to the overall therapy of peripheral vascular disease and its associated spasm.

INDICATIONS

peripheral vascular disorders, intermittent claudication, arteriosclerosis, labile hypertension, rheumatic conditions.

DOSAGE

oral—1-2 tablets four to six times daily.
parenteral—1-3 ampoules daily may be administered.

AVAILABILITY

tablets (2½ mg.) in containers of 100 and 500.
ampoules (5 mg. in 1 ml.) in boxes of 12.
*Perdilatal was formerly known as Dilatal.

The formula is: 1-(p-hydroxyphenyl)-2-(1'methyl-3'-phenyl-propylamino)-propanol-(1) hydrochloride.

1856 S&N 1956

SMITH & NEPHEW LIMITED · Welwyn Garden City · Herts

Aspirin intolerance in rheumatoid arthritis

BUFFERIN—the new, better-tolerated analgesic

Most successful answer yet discovered. The latest report by the Joint Council Committee of the Medical Research Council and the Nuffield Foundation (on clinical trials of cortisone, ACTH, and other therapeutic measures in chronic rheumatic diseases) confirms the findings of the previous year. "At the end of two years, therefore, as previously reported at the end of one year, it appears that for practical purposes there is remarkably little to choose between cortisone and aspirin in the management of this group of patients." (British Medical Journal, 1955, *2*, 695.)

As aspirin is a far cheaper and less dangerous therapeutic agent it is obvious why practitioners prefer it to cortisone. But there is still the problem of aspirin intolerance which affects as many as 42% of arthritic patients. And Bufferin, the new analgesic which reduces gastric upset to a negligible minimum, is certainly the most successful answer yet discovered. (J.A.M.A., June 4, 1955, p. 387.)

Far better tolerated—even by arthritics. Bufferin combines acetylsalicylic acid with the antacids aluminium glycinate and magnesium carbonate (gentle antacid agents which do not produce "acid rebound"), and is well tolerated—even by arthritics. In blind trials amongst arthritics with proven intolerance to ordinary aspirin, 70% had no gastric symptoms after taking large doses of Bufferin over periods of 4 to 16 months. (J.A.M.A., June 4, 1955, p. 387.)

Acts twice as quickly as aspirin. Not only is Bufferin better tolerated by the stomach than ordinary aspirin, but its pain-relieving ingredient is absorbed twice as quickly into the blood-stream. Trials show that on an average the 10-minute salicylate level after taking Bufferin was more than 20% higher than the 20-minute level after taking ordinary aspirin (J. Amer. Pharm. Assoc. 1950, 39:21.)

BUFFERIN HAS NO EQUIVALENT IN THE B.P. OR NATIONAL FORMULARY. THIS FULLY JUSTIFIES THE PRESCRIPTION OF BUFFERIN ON E.C.10.

A detailed, fully documented leaflet and sample are available on request to the makers, Bristol-Myers Co. Ltd., Dept. B., 211 Blackfriars Road, London, S.E.1.

BUFFERIN
TRADE MARK
ANTACID ANALGESIC

Formula: *Acetylsalicylic Acid 5 gr. : Aluminium Glycinate ½ gr. : Magnesium Carbonate 1½ gr*

DRAMAMINE* IN VERTIGO

Labyrinthine Disturbance

Long recognised as a standard for the management of motion sickness, Dramamine has become accepted in the control of a variety of other clinical conditions characterised by vertigo.

Vertigo, it has been claimed†, is primarily due to a disturbance of those organs of the body that are responsible for body balance. When the posture of the head is changed, the gelatinous substance in the semi-circular canals begins to flow. This flow initiates neural impulses which are transmitted to the vestibular nuclei. From this point impulses are sent to different parts of the body to cause the symptom complex of vertigo.

Some impulses reach the eye muscles and cause nystagmus ; some reach the cerebellum and skeletal muscles and righting of the head results ; others activate the emetic centre to result in nausea, while still others reach the cerebrum making the person aware of his disturbed equilibrium. *Vertigo may be caused by a disease or abnormal stimuli of any of these tissues involved in the transmission of the vertigo impulse, including the cerebellum and the end organs.*

A possible explanation of Dramamine's action is that it depresses the overstimulated labyrinthine structure of the inner ear. Depression, therefore, takes place at the point at which these impulses, causing vertigo, nausea and similar disturbances, originate. Some investigators have suggested that Dramamine may have an additional sedative effect on the central nervous system.

Repeated clinical studies have established Dramamine as valuable in the control of the symptoms of Ménière's syndrome, radiation sickness, hypertension vertigo, the vertigo of fenestration procedures, labyrinthitis and vestibular dysfunction associated with antibiotic therapy, as well as in motion sickness.

Any of these conditions in which Dramamine is effective may be classed as " disease or abnormal stimuli "† of the tissues including the end organs (gastro-intestinal tract, eyes) and their nerve pathways to the labyrinth.

Dramamine (brand of dimenhydrinate) is supplied in tablets of 50 mg. in bottles of 12, 36, 100 and 1000 tablets and in cartons (10 strips of 10 tablets). G. D. Searle & Co., Ltd., High Wycombe, Bucks.

Telephone : High Wycombe 1770.

* *Regd. Trade Mark*

†" Dizziness " : Vertigo and Syncope, G.P. 8:35 (Nov.) 1953.

The site of Dramamine's action is probably in the labyrinthine structure.

SEARLE

DR:P116 3

can appetite be controlled safely?

PRELUDIN is being increasingly prescribed by doctors because of the safety and ease with which it enables excessive eating to be controlled. It produces no adverse effects upon the heart and none upon the blood pressure. PRELUDIN enables the patient to adhere effortlessly to a recommended diet and is the wise prescription in all cases of obesity.

PRELUDIN is in tubes of 20, or bottles of 250 tablets of 25 mg. each.

PRELUDIN*

Brand of 2-phenyl-3-methyl-tetrahydro-1-4-oxazine-hydrochloride

The appetite controlling agent that does not affect the heart

Manufactured and Distributed in England by Pfizer Ltd. Folkestone, Kent, for

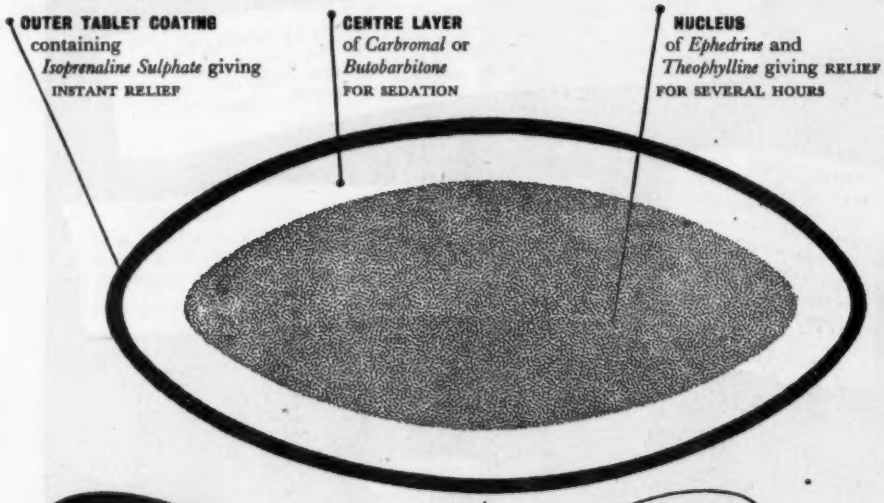
C. H. Boehringer Sohn, Ingelheim am Rhein

Registered proprietors of the Trade Mark *Regd Trade Mark

new

SUSTAINED RELIEF OF BRONCHIAL ASTHMA

PROVIDED BY RELAY ACTION IN A SINGLE TABLET



BY NIGHT

FYDAL

FYDAL TABLETS, containing Butobarbitone, are intended for night use and should be taken when premonitory symptoms of an attack appear.

Formula: Ephed. Hydrochlor., B.P. 32 mg.
Theophyll., B.P. 64 mg.
Isoprenal. Sulph., B.P. 10 mg.
Butobarbitone, B.P.C. 48 mg.

Basic N.H.S. price . . . . foil-pack of 10 tablets . . . 1/8d.

BY DAY

FYDALEX

FYDALEX TABLETS, contain Carbromal in place of Butobarbitone and are for use during the day. Like FYDAL, they provide immediate and prolonged relief.

Formula: Ephed. Hydrochlor., B.P. 32 mg.
Theophyll., B.P. 64 mg.
Isoprenal. Sulph., B.P. 10 mg.
Carbrom., B.P.C. 96 mg.

Basic N.H.S. price . . . . foil-pack of 10 tablets . . . 1/4½ & 5d. P. Tax

Used conjointly, FYDAL and FYDALEX provide an effective round-the-clock treatment and may be prescribed accordingly.

Literature and further information available from

BOOTS PURE DRUG COMPANY LIMITED · NOTTINGHAM · ENGLAND

Boots

PACATAL TRADE MARK

THE IMPROVED TRANQUILLIZING DRUG WITH FEWER SIDE-EFFECTS

9-(1-methyl-3-piperidylmethyl) phenothiazine.

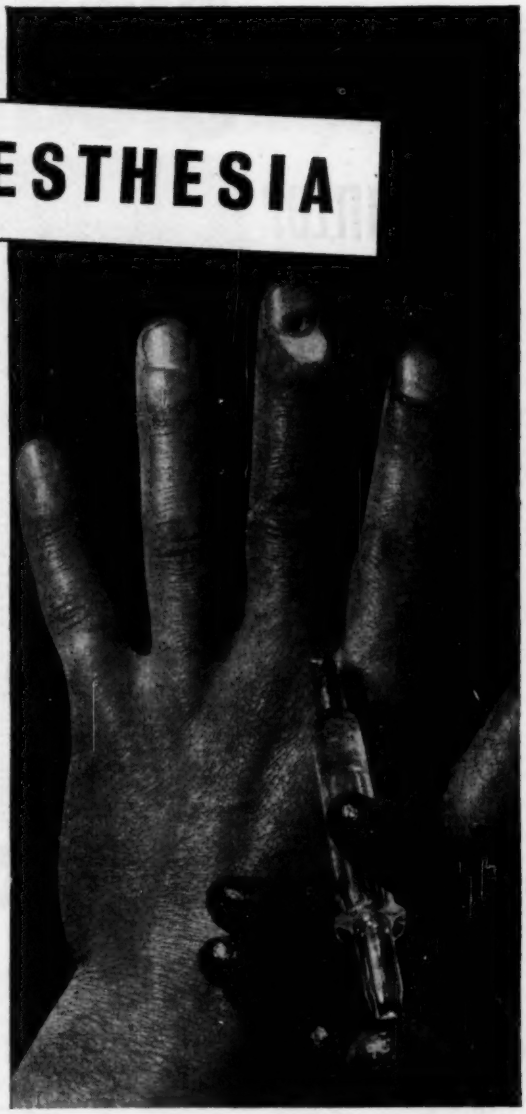
Clinical trials in many countries have proved PACATAL to be highly effective in mental disturbances ranging from the psychoneuroses to the psychoses . . . PACATAL reduces tension, makes the patient quieter, less confused—but still alert, objective, co-operative, amenable to psychotherapy.

PACATAL
is available in tablets for oral administration and ampoules for parenteral use.
Tablets 25 mg. in bottles of 50 and 500.
Ampoules, each containing 50 mg. in 2 ml. in boxes of 10 and 50.

PACATAL
can be administered with complete confidence for it is of very low toxicity and uniquely free from such troublesome side-effects as skin rashes, jaundice, Parkinson symptoms, orthostatic collapse and tachycardia.

WILLIAM R. WARNER & CO. LTD., POWER RD., LONDON, W.4.
PAC325/7

LOCAL ANAESTHESIA



INFILTRATION ANAESTHESIA demands a satisfactory spread of anaesthetic solution. It is especially valuable in the outpatient department in cases where general anaesthesia is contra-indicated.

A CLEAR CASE FOR HYALASE, the enzyme hyaluronidase.

HYALASE greatly enhances the spread and absorption of the anaesthetic. It can be easily combined with the local anaesthetic with or without adrenaline, producing a greater area of anaesthesia of satisfactory duration.

HYALASE can be successfully applied whenever infiltration anaesthesia is the method of choice.

FULLY-DESCRIPTIVE LITERATURE is available and a Technical Information Service is always at your disposal.

A clear case for HYALASE

TRADE MARK

BENGER LABORATORIES LIMITED · HOLMES CHAPEL · CHESHIRE

A BENGER PRODUCT

H.9. (REV)

cicatrin

to counter the changing pattern of bacterial resistance

All the available evidence of the development of bacterial resistance points to the need for a safe and effective means of securing control of local infections without the employment of those antibiotics which are of greatest value for systemic use.

a new advance in wound therapy:

CICATRIN has advantages over existing modes of wound therapy for the following reasons:—

- ★ is bactericidal and bacteriostatic.
- ★ minimizes the risk of the development of resistant strains.
- ★ is effective against most of the pathogens including those resistant to penicillin and streptomycin.
- ★ Healing is stimulated by selected amino acids.
- ★ is not cyto-toxic.
- ★ is active in the presence of blood and tissue exudates.
- ★ is non-allergenic.

FORMULA: Each gramme contains:
Neomycin Sulphate 5 mg.
Zinc Bacitracin 250 units.
l-Cystine 2 mg.
dl-Threonine 1 mg.
Glycine 10 mg.

PACKS: 15 gramme Sprinkler **PRICE** 6/- (plus P.T.)
15 gramme Collapsible Tube **PRICE** 6/- (plus P.T.)

cicatrin

cream and powder

amino acid and antibiotic

CREWE: *Telephone: Crewe 3251-5*

CALMIC LIMITED

LONDON: *2 Mansfield Street, W.1 Tel: LANgham 8036-9*

AUSTRALIA: 458–468 Wattle Street, Ultimo, Sydney, N.S.W.

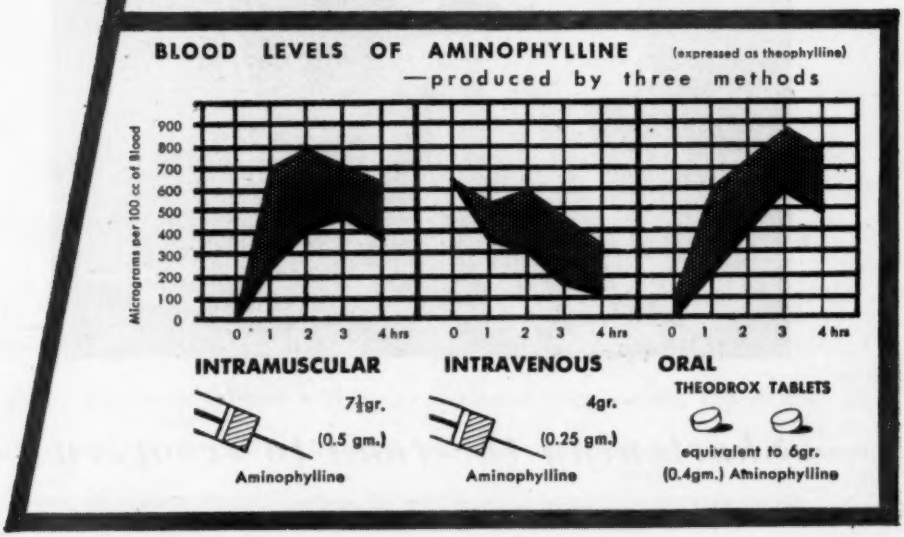
CANADA Terminal Building, York St., Toronto

22 CN2

THEODROX *Simplifies*

Brit. Pat. 727831

oral aminophylline therapy . . . by producing High Blood Levels without gastric distress



The valuable properties of aminophylline can now be utilized to the full, simply and effectively—by the *oral* administration of 'Theodrox'. The serious disadvantage associated with the oral dosage of *plain* aminophylline —acute gastric distress—has been overcome. A high blood level of the active component, theophylline—such as could be obtained satisfactorily only by parenteral administration—is now possible. 'Theodrox' contains aminophylline combined with specially prepared aluminium hydroxide, and gastric discomfort is reduced to a minimum. When a degree of sedation is also required, tablets of 'Theodrox' With Phenobarbitone (containing gr. ¼ phenobarbitone) are indicated.

'Theodrox' tablets each contain gr. 3 aminophylline, and both forms of 'Theodrox' are available in bottles of 25, 100 and 1,000.

INDICATIONS

For the treatment of Bronchial or Cardiac Asthma; as a diuretic in Congestive Heart Failure; as a supplement to emergency treatment in Status Asthmaticus; Angina Pectoris.

RIKER

'THEODROX' is a Registered Trade Mark of:

RIKER LABORATORIES LIMITED
LOUGHBOROUGH LEICS.

Shortening the road to recovery

Among the legacies of shock, injury, burns, surgery, severe infection and other conditions of extra-ordinary physiological stress is a period when the body's defences are severely taxed. In such conditions tissue depletion of ascorbic acid and the B-complex vitamins often occurs, hindering antibody production and tissue repair. Such situations can be safely surmounted with STRESSCAPS—the new LEDERLE formula combining five essential factors in effective therapeutic amounts. One or two capsules daily will usually overcome the vitamin deficiency and prove the real value of STRESSCAPS in shortening the road to recovery.

STRESSCAPS*

*TRADE MARK

Stress Formula Vitamins Lederle

Each capsule contains: THIAMINE MONONITRATE, 10 mg; RIBOFLAVINE, 10 mg; NIACINAMIDE, 100 mg; ASCORBIC ACID, 300 mg; FOLIC ACID, 5 mg. *In bottles of 30.*

50 Lederle FIFTIETH ANNIVERSARY

LEDERLE LABORATORIES DIVISION

Cyanamid PRODUCTS LTD. **LONDON, W.C.2**

"The time has come"

.....the doctor said

" To talk of many things :
Of coughs—and hacks—and
tossing nights—
Of eyes with purple rings.
And why the throat is raspy hot
And whether coughs have wings."

With apologies to Lewis Carroll

The time has definitely come to talk of Lipect, for Lipect is not just another 'new remedy'. It is a carefully balanced combination of the powerful and safe cough suppressant, pholcodine with the antihistaminic, antazoline hydrochloride and the expectorant ipecacuanha. Lipect not only relieves ineffectual hacking but will also control allergic bronchospasm and stimulate expectoration. In addition, it is pleasantly flavoured, a feature that makes it readily acceptable to young and old alike.

LIPECT *Cough Elixir*

Packs: Bottles of 4 fl. oz.

Wyeth

The word 'Lipect' is the registered trade mark of

John Wyeth & Brother Limited, Clifton House, Euston Road, London, N.W.1

Li
25

Oral treatment of diabetes mellitus

RASTINON

»Hoechst«

N-(4-methyl-benzene-sulphonyl)-N'-butyl urea

Clinical trials are already being conducted in certain hospitals in this country and the results will shortly be published.
Supplies of Rastinon tablets, for the time being, will be restricted to Diabetic Clinics from whom enquiries are invited.

HOECHST PHARMACEUTICALS LIMITED
SLOUGH

Distributed in Great Britain and Northern Ireland by:

Horlicks Limited, Slough

COMBIZYM

Multivalent digestive enzyme preparation

Proteases, lipase, amylase, cellulase and hemicellulases, partly of pancreatic, partly of vegetable origin, standardized, of constant enzymatic action

Fully effective upon the whole of the food, irrespective of acid or alkaline reaction of the intestinal tract

Packets of 30 and 150 dragees

MONOTREAN

Basic papaverine with quinine in an approved and well balanced combination

for the symptomatic treatment of vertigo, even in obstinate cases

Packets of 30 dragees

are available for the doctor's use through the firm of

ROBERTS & CO. 76 New Bond Street, **LONDON W1**

Literature and medical samples on request

LUITPOLD-WERK MÜNCHEN 25

Antiseptics

"On the whole we feel that, after more than two and a half years' use, hibitane is the most satisfactory one available at present."

British Medical Journal, 1956, *ii*, 200.

'HIBITANE'

Regd. Trade Mark

(CHLORHEXIDINE)

✳ Available as:

'HIBITANE' CONCENTRATE (2%)

'HIBITANE' DIACETATE POWDER

'HIBITANE' OBSTETRIC CREAM (1%)

'HIBITANE' ANTISEPTIC CREAM (1%)

'HIBITANE' ANTISEPTIC LOZENGES

ICI

IMPERIAL CHEMICAL (PHARMACEUTICALS) LIMITED, WILMSLOW, CHESHIRE

Ph 676

A subsidiary company of Imperial Chemical Industries Limited

the famous Dutch
RABRO STOMACH TABLETS
are now at your disposal

THE MODERN THERAPY FOR **GASTRIC** AND **DUODENAL ULCERS**

formula

block-liquorice	300 mg.
bismuth subnitrate	350 mg.
magnesium carbonate	400 mg.
sodium bicarbonate	200 mg.
frangula	25 mg.
calamus	25 mg.

dosage
2 tablets 3 times daily after meals

advantages
+ ambulatory treatment
+ strict dieting unnecessary
+ assists healing
+ no side effects

packings
tubes of 40 tablets of 1500 mg. and
dispensing packs of 500 tablets of 1500 mg.

manufactured by:
RABRO COMPANY N.V.,
Nijmegen - Holland

distributors:
MACWILL & COMPANY, LTD.,
7, West Road, Kingston-on-Thames

full literature is available to the medical profession ***not advertised to the public***

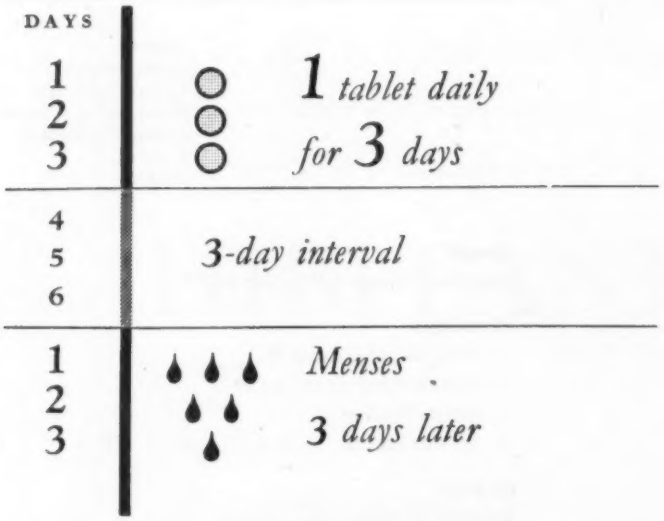
ZONDEK'S METHOD

" medical curettage "

For rapid action

AMENORONE FORTE

Each tablet contains Ethisterone 50 mg., Ethinyl-oestradiol 0.05 mg.
Box of 3 tablets intended for a 3-day course.



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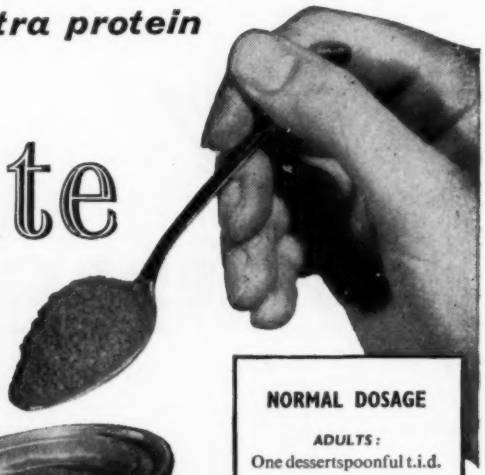

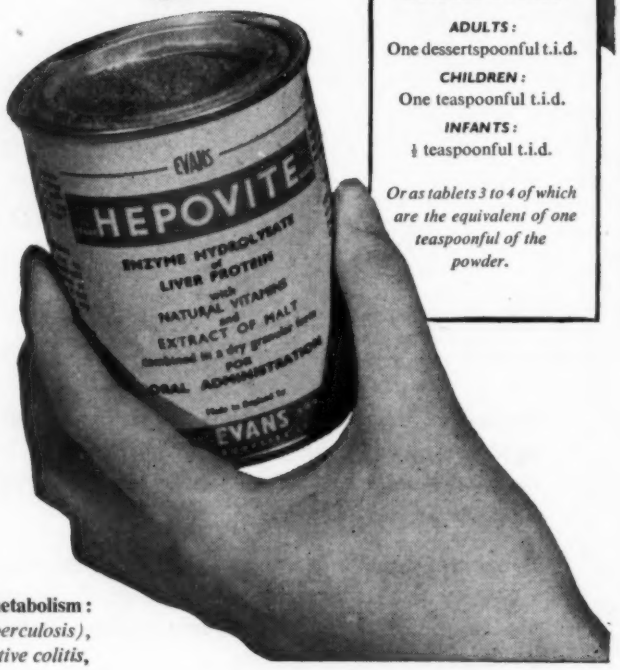

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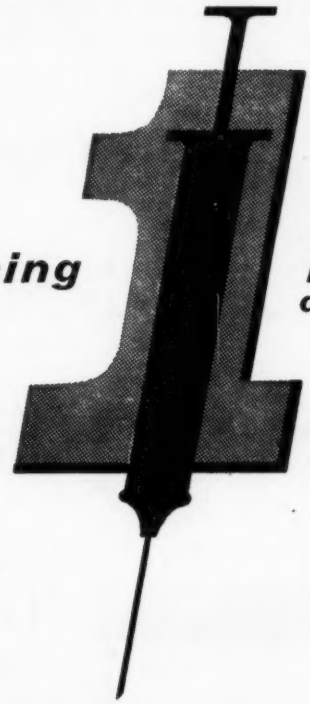

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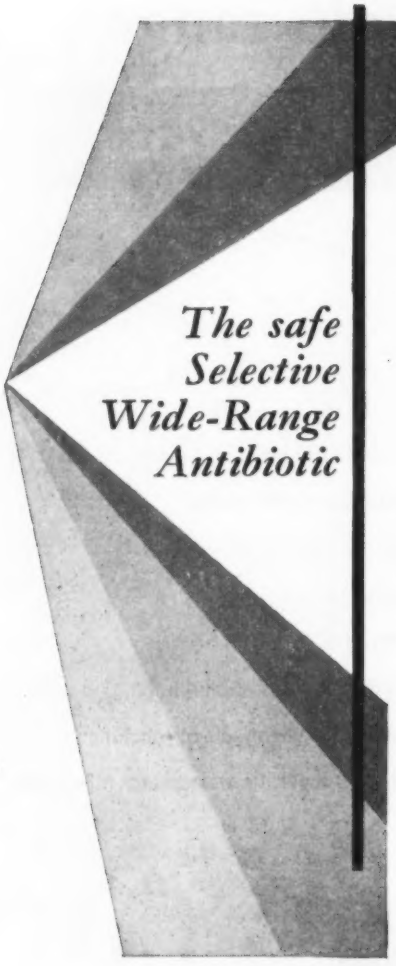

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FUNCTIONS OF THE MENTAL HOSPITAL *

D. H. CLARK
M.A. Camb., M.B. Edin., M.R.C.P.E., D.P.M.
MEDICAL SUPERINTENDENT, FULBOURN HOSPITAL; PSYCHIATRIST TO ADDENBROOKE'S HOSPITAL, CAMBRIDGE

MANY of the difficulties of the mental hospitals, and some of the dissatisfactions with them, arise from their trying to perform a number of different functions.

Many of these hospitals were set up in response to the Asylums Acts, 1845 to 1853, and others from time to time as the need arose. (Only five new mental hospitals were built in England after 1914.) They were designed to house the mentally ill who until then had been kept in gaols and workhouses or allowed to roam at large. This purpose they fulfilled fairly well, especially in the early days of the enthusiasms of "moral treatment." But, as the years went by, the buildings became old-fashioned, and, despite sporadic attempts at modernisation and liberalisation, the social structure grew more rigid and repressive. The patients were held firmly under many restrictive rules, of which the multiplication *ad absurdum* of suicide precautions was the most striking example; and the medical and nursing staff, though humane, were often uninterested and apathetic. This produced the familiar picture of locked doors and clashing keys, hordes of milling patients, and dispirited staff doing their minimal duty.

In the last generation there has been a great change. Psychiatry has become a respectable medical specialty, while psycho-analysis has become a major part of man's knowledge of himself. In the mental hospitals the physical treatments have generated therapeutic enthusiasm, and the provisions of the Mental Treatment Act and the opening of numerous outpatient departments have brought in many recoverable voluntary patients.

The mental hospitals have also been brought much more into the public eye, and their ancient way of proceeding has come under scrutiny. Some of this has been constructive, but some of it merely critical. In this paper I shall examine what is expected of mental hospitals, and some of the new ideals of how they should function; and I shall show that the expectations and the ideals sometimes conflict.

FOUR SPECIAL FUNCTIONS

All agree that the mental hospital must first care for those in its catchment area who fall ill of severe mental illnesses: it alone can treat them. A mental hospital may, however, be called on to handle certain other groups, each of which calls for a special function. These are: (1) the acute social and mental breakdowns (the Observation Ward function); (2) the aged disturbed patients (the Geriatric Hospital function); (3) the court cases (the Hospital for Psychopaths function); and (4) the neurotic illnesses (the Neurosis Centre function).

The Observation Ward

This is a function which many county mental hospitals are forced to perform. Daily a certain number of citizens become acutely mentally disordered and cause a social crisis; they have to be put into hospital "for observation." It is for this purpose that sections 20 and 21 of the Lunacy Act were designed. In the big cities there are "observation wards" specially set aside for receiving these acutely disturbed patients. All day and all night the duly authorised officers ply busily to and fro, bringing in the acute schizophrenic, the delirium tremens, the attempted suicide, and the hallucinated tramp; they bring them from the tenements, from the gutters, from the casualty departments, and from the police-station cells. In the observation ward the heterogeneous group settles down and is sorted out; about half of them are discharged within 14 days, while those clearly diagnosed and in need of psychiatric treatment pass on to the mental hospitals as voluntary or certified patients.

Many provincial mental hospitals, however, have no observation ward as a filter, and have always had to take all the acute psychiatric disturbances of the area. Patients are liable to arrive at the door, violent, agitated, and restrained by a posse of police. They come at all hours of the day and night, and it is not always possible to sort out the problem on the doorstep. Hence the ward they come into must be closed. The magistrate or the duly authorised officer would be very angry if an irate patient reappeared within 24 hours of his removal; so the door must be locked—which creates a bad impression on the visitors to mildly ill voluntary patients.

This observation-ward function must continue to be met by most mental hospitals, though this will usually mean that there must be one locked admission ward. When we have more outpatient clinics and more domiciliary consultations, however, it may be possible to sort out more cases before admission.

The Geriatric Hospital

This is a function that falls to the mental hospital by default. As we are so often reminded, the country is getting older; there is an increasing accumulation of aged in the land. Many of them can care for themselves, and many are looked after by their devoted families; but more and more are without support and too ill to carry on. All aged sick are somewhat confused and mentally disturbed, and many markedly so: if they are properly cared for physically, and looked after kindly, they settle down, but if this is not possible the agitation and confusion increase until the old people are unmanageable. They are then brought to the mental hospital, always unwillingly, either under a certificate or a Short Order. Once there, most of them settle down rapidly; only a very few show a continuing psychotic state that requires skilled psychiatric nursing. A fair proportion do not survive the first month, but those that get over the transition stabilise and can get up and go about. They are, of course, confused, lost, and incontinent, and require a great deal of physical nursing; but psychiatric skill is not called for. Some recover sufficiently to be considered for discharge; but there is usually nowhere to go; and now that the old lady is in hospital the overpressed local-authority welfare officer crosses her off his Part III waiting-list, the children sell grandma's bed, the general practitioner sends her medical card to the hospital, and everyone, with a sigh of relief, forgets her. Thus the mental hospitals have an increasing number of confused old people to care for.

Our society, it has been said, has decided that a mental hospital is a fit place for old people to die in. The staff can only comply, and do their best to meet this demand by providing pleasant wards, good food, kindliness, and good physical nursing to ease the last days of these unfortunate people. But this work absorbs a great deal of their limited time.

The Hospital for Psychopaths

The relation between the courts and those in charge of the mentally disordered has always been a special one. Doctors and nurses in charge of the physically ill have little to do with the police or the criminal courts; those in charge of the mentally ill have frequent contact, because mental and nervous illness leads people to do things that offend against the law.

* Based on an address delivered at the annual general meeting of the Cambridgeshire Mental Welfare Association on Oct. 19, 1955.

In the old asylum days the matter was fairly simple. Constables apprehended criminals and vagrants and took them to gaols or workhouses. If they appeared to be insane, the magistrate called the doctor to advise him and then certified them. They were removed to the asylum where they were as firmly locked up as in a gaol; the only difference was that the sentence was indeterminate. The forces of law and order had removed another offender from society, and a good thing too. For it should be remembered that this is the function of the police—to hunt down those who offend against society's laws and see that they are locked up.

Nowadays the matter is more complex. The asylum has become a mental hospital, and prides itself on the way in which it discharges patients. The policeman, by the exercise of long observation, deduction, and lying in wait, secures his evidence and conviction; the offender disappears—and then a few months later reappears, sent from hospital on parole. Not unnaturally the policeman is much annoyed with the hospital for letting out the man on whom he had so carefully obtained a conviction. So the policeman and the doctor have both done the task which they believe society wishes them to do, and they find themselves in conflict.

People who appear in court and are remanded for psychiatric examination fall roughly into three groups:

1. Those who are definitely mentally disordered and suffering from a psychosis.

2. Those who are guilty of antisocial acts and are not clearly mentally disordered, but either appear peculiar or have a history of episodes of mental disturbance.

3. Those who are emotionally abnormal but quite sane and in touch with reality (in this group fall most of the sex offenders).

The handling of these three categories is very different. The psychotics are rightly sent to a mental hospital; they are given treatment for their mental illness like other patients, and like them are discharged when they recover; the fact that their mental illness came to notice through the law-courts is immaterial. The second group present some problems, but the court is usually prepared to take the guidance of the hospital doctors on whether there is any prospect of treating them successfully.

It is with the third group, the sex offenders, that much confusion arises about the function of the mental hospital. Psychiatric treatment of these people is very difficult at any time. It is usually best carried out at an outpatient clinic where the patient coöperates willingly; if he is compulsorily brought to treatment, less can be done. Psychotherapy, probably the best method for the purpose, is provided in a few prisons, but not in most; it is provided for a few patients in mental hospitals but not for most of them.

To a conscientious magistrate it is repugnant to send to prison a man suffering from an obvious personality deviation, especially since there has been much public agitation along the lines "he is sick, why punish him?"—agitation which all psychiatrists are assumed to endorse. On the one hand the magistrate desires to help the sick man; on the other hand there is the public demand, presented by the police, that he be locked up. A compromise often seems to be a probation order under section 4 of the Criminal Justice Act with a condition of residence for a year in a mental hospital. This pleases everyone at the time. The police feel that the man has been locked up and they record a successful conviction; the magistrate feels that he has done the socially right thing; the prisoner feels he has got off lightly. All are pleased—except the hospital that receives the troublesome problem. For they are asked to do two irreconcilable things—to act as a hospital to do treatment, and as a gaol to keep the offender locked up. A modern mental hospital with open wards cannot keep such a patient locked up: an old-fashioned asylum with locked wards could seldom give adequate treatment. The usual result is that the prisoner-patient hangs about for months in the admission ward, watched nervously by the staff lest he commit some antisocial act. He resents the atmosphere and will not coöperate in treatment; he asks to be allowed to go but is refused. He may even become so dissatisfied that he leaves hospital and chances a prison sentence for breaking probation. The prisoner-patient does not profit by his time in hospital and the hospital is disturbed by it, for the staff are forced back into their old rôle of gaolers.

In facing this problem I think we must be clear and firm. We shall of course always take the mentally ill. But with regard to the sexual offenders, and those who are not mentally ill, we must give the courts clear guidance. If we feel the patient will not benefit from inpatient psychiatric treatment, we must say so. If we feel he can benefit, then we can advise it, but must say:

"If this person comes to hospital for treatment we discharge him when we think fit; this is a hospital, not a prison. If you wish him to be punished, or to be locked up for the public safety, do not send him to us. If he is mentally clear and wishes to get away from hospital, we shall not be able or willing to hold him."

We do an ill service to other patients, and bring no credit to ourselves, by refusing to admit that there are some patients whom the mental hospital cannot treat effectively. At the same time we must press for institutions where these people can be treated. Differing experiments like Herstedvester (Taylor 1949) and the Belmont Industrial Unit (Maxwell Jones 1952) have indicated possible forms of organisation.

The Neurosis Centre

A function which the mental hospital performs indifferently is the treatment of neurotic illnesses. The main task of the mental hospital is to treat psychotics—people suffering from major mental disorders. The neurotics are mostly treated by their general practitioners. Some come to psychiatrists and are treated as outpatients, often by psychotherapy. A few, however, require inpatient treatment. There are also sufferers from borderline illnesses—of which the mild depressive breakdown is the best example—who can be managed at outpatient clinics but would benefit from a few weeks in an understanding psychiatric atmosphere. One of the aims of the Mental Treatment Act in making voluntary admission possible was to allow these people to obtain treatment they so obviously needed.

Since 1930 the mental hospitals have been trying to fulfil this function of treating psychoneurotic disorders—and they have found it very difficult. These people come as voluntary patients; their understanding is clear and their minds are not clouded. They resent "being put in with mad people," and they dislike being in locked wards—which is not necessary for them, for they are not confused or violent. Their sleep is poor and they do not like being put with people who are noisy during the nights. They are often emotionally disturbed people, unhappy in their human relationships, and they make demands on the nursing staff for attention and affection. Some of them respond to physical therapies or sedation, but many of them need psychotherapy, which takes much medical time.

To provide satisfactory treatment for such people in the wards of a mental hospital is difficult. It can be done in a private nursing-home (outside the National Health Service) or in a neurosis unit, but not in century-old wards. The mildly ill, preferring to face their illness rather than remain in locked wards with acutely disturbed patients, leave in disgust and tell their friends what a terrible place the mental hospital is.

One answer has been to set up special units associated with the mental hospital but physically separate from

it. These have been quite successful. They deal very adequately with the milder illnesses, and make it possible to offer treatment to a section of the population who need it and respond. Indeed, so satisfactory have these special units been that *all* mental hospitals are now expected to provide this service, whether they have the facilities or not. Actually, any hospital with less than 3 psychiatric beds per 1000 catchment population finds it almost impossible to provide a neurosis unit. It is fully occupied looking after the psychotic and senile problems of the area. The answer is the provision of admission and neurosis units, and regional boards and the Ministry of Health must be pressed to provide these where they do not at present exist.

FOUR IDEALS

These are some of the functions the mental hospital is called on to perform. But this is not all that confuses expectations and perplexes those studying to meet the demands. There are several different ideals of what a mental hospital ought to try to do, what sort of a place it should be. These may be labelled: (1) the General Hospital with Modifications; (2) the Open-door Hospital; (3) the Active-therapy Hospital; and (4) the Therapeutic Community.

The General Hospital with Modifications

Fifty years ago there was a marked contrast between the general hospital, with its efficient scrubbed wards and its technically efficient nurses in the Nightingale tradition, and the asylum, with its attendants, often ill-trained and preoccupied with security, restraint, and promotion by seniority. Doctors fresh from a general hospital would complain that there was no-one who could undertake even simple nursing duties like injections or instrument sterilisation.

Therefore the slogan was raised—we must make asylums as like a general hospital as we can! This has been the aim upon which many reforms of the past thirty years have been based. With the development of the physical treatments—insulin, metrazol, electroplexy, leucotomy—the idea grew apace. Skilled nursing techniques—intravenous injections, sterilisations, asepsis—became essential in the new treatments. Mental illnesses began to look like physical complaints. Patients came in, were "treated" (i.e., had something quasi-surgical done to them) recovered, and were discharged promptly. The enthusiasm was tremendous and infectious, and much good followed. Mental nurses studied vigorously for their examinations and then passed on to do general nursing; general-trained nurses came to work in mental hospitals. In 1950 the Royal Medico-Psychological Association examinations ceased and the mental nurses were admitted to the General Register and sat the same preliminary examination as the general nurses. Promotion of nurses was by competition rather than by seniority. The old social barrier was gone and the gulf was bridged.

The doctors, too, changed. The physical therapies of the 1930s invigorated the work of the mental-hospital doctors. Now they were doing something, they thought—really treating and really curing patients. "Early treatment" was the cry! Outpatient clinics were opened everywhere and the admission-rates of the hospital soared. It was even said: "with modern treatments we cure psychosis; we prevent the chronic mental illnesses developing; the "back ward chronics" are a legacy of the past and will not occur again."

Much of this was wholly admirable and it had many excellent results. But as with all excellent reforms in human affairs, there were certain unlooked-for side-effects that created the problems of the next generation.

First, one of the major premises proved false. The long-term psychoses remain; they have not been wiped out by the modern treatments. The physical treatments produce striking remissions in most new admissions: electroplexy has changed the picture in the depressive illnesses of middle age, and insulin-coma therapy terminates the schizophrenic illnesses of acute onset. Early treatment is worth while, for it cuts short much misery and illness. But a proportion of patients are ill for years despite all the modern physical methods and can only be helped by long-term methods. The back wards continue to fill up. There may not be quite so many long-term mental invalids as there used to be, but no-one has yet proved this. There are certainly still very many of them.

On the staff this pursuit of the general-hospital ideal had some unexpected effects. In the old days the examinations were not a bugbear. If you took them you got some extra pay, but even if you didn't you were all right. Now everything depends on them, and the examiners set a progressively higher scholastic standard. These higher standards are aimed at the general nurses, with whom the mental nurses joined forces 6 years ago. Now many good recruits to the mental-nursing service lose heart at having to face examinations that are too hard for them, and they give up mental nursing entirely. At the same time, the national drop in nursing recruitment has created a most difficult situation. The mental hospitals' shortage of staff has paradoxically been made worse by the laudable plan of linking them firmly to the general nurses to raise their social status and professional knowledge. The syllabus, to conform with that of the general nurses, is full of anatomy and physiology which is irrelevant to a student nurse perplexed by the problems of handling disturbed schizophrenics.

A further difficulty has arisen. In the old days an attendant could be put to any task. In many mental hospitals now, misled by ideals based on general nursing, there is heard the cry: "It's not a nurse's duty"—to take the patients out digging, to teach the patients sewing, to organise games, &c. Yet time spent in these social activities with a retarded patient is some of the most valuable mental nursing that can be done. Thus, starting from the notion of making the asylum like a general hospital, we have done much good to the admission wards but considerable harm to the long-stay patients and have caused much demoralisation and confusion among a depleted nursing-staff.

The idea of adopting the standards of the general hospital has been of value and has brought benefits, but it has gone too far, so that the mental hospitals have lost confidence in themselves. I think that we must say:

> "Yes, this is a hospital, and it is like a general hospital in some ways. But it is different, fundamentally different. It has a different task to do, carried out in a different way. There are many things a mental hospital can do which a general hospital cannot, and of these the most important is psychiatric nursing—the understanding handling of the mentally and nervously disturbed."

This attitude should be reflected in the nursing training, which, though working within the General Nursing Council syllabus, must lay constant stress on interpersonal reactions.

The Open-door Hospital

In the old asylums all doors possible were locked and there was a most elaborate system of checks and security arrangements. Every visitor and most new patients were appalled by the constant rattling of keys and unlocking and locking of every door that they passed through. Much of this has now been recognised as unnecessary and many more doors are open.

There is, however, considerable discussion on how far this should go. One mental hospital, Dingleton Hospital, Melrose, is proud of the fact that since 1949 it has had no locked doors whatever. Though others have followed, they were the first, and there is no question that a remarkable experiment has been carried out. In the 400-bed mental hospital, situated beside a small Scottish Border town, taking every mental illness that arises in a

considerable rural area, there are no locked doors at all; all wards can be freely entered and left, and there are no locked side-rooms. All patients can go into the grounds and many go into the town. The results in the hospital have been excellent; there is a great lowering of tension, and relations between the staff and patients are very much better. Relations between the town and the hospital are excellent; after an initial period of doubt the people of Melrose have accepted that it is all right for the Dingleton patients to wander about the town. They are proud of their hospital and not afraid to send their relatives there for treatment (Bell 1955).

This has raised the demand that the principle should be applied elsewhere, and there has been criticism of hospitals where doors are still locked.

The open door is a great ideal and it is certainly possible in any mental hospital to have all but two or three wards open. But hospitals which are near large towns and receive disturbed urban patients cannot, I think, go further than this, and there is a certain danger that too much emphasis on open doors may lead to patients being too heavily sedated, subjected to too much physical treatment, or kept too long in bed.

The Active-therapy Hospital

Another modern plan for the mental hospital is active therapy. This approach to chronic psychotics was worked out by Dr. Hermann Simon (1927, 1929), a German medical superintendent of last generation. In his early days he was horrified by the practice in German asylums, where chronic psychotics were either allowed to mill around—violent, disturbed, and noisy—with very little supervision, or else were kept strictly in bed for weeks on end. He concluded that the answer was occupation—work. This concept he applied with Teutonic thoroughness, first at Warstein and then at Guetersloh which became very famous and was widely copied. Occupation was provided for all patients; however deteriorated and demented, all of them had to work. The work was not necessarily productive, and there was no great interest in the end-product. Tasks were often undertaken uneconomically in order to occupy deteriorated patients. If they did not work they lost privileges or were even subject to penalties; eccentricities and asylum idiosyncrasies were forbidden; personal ornamentation was stopped and also litigious letter-writing. Noisy outbursts were forbidden; if they occurred, the patient was placed for a short spell in a small bare side-room, known as a "separation room."

In the 1920s this was a great advance. Here was an asylum quiet and orderly, with all patients neat, tidy, busy, and healthy—no noise, no filth, no violence, no injuries. Visitors came from all over the world to see. In Holland especially, active therapy has been thoroughly applied (see Carstairs, Clark, and O'Connor 1955).

Initially the impression is good. The patients are quiet and busy; there is none of the violence, aimlessness, and pitiable distraction seen in many mental-hospital wards. Many useful things are produced—clogs, electrical parts, furniture, cloth—both for use in the hospital and for sale outside. As with all great reforms, however, the passage of time has brought out the disadvantages. The disciplinary side of Simon's teaching has been emphasised more. Separation rooms are everywhere and doctors speak freely of *punishing* patients for misbehaviour; there is great talk of the patient's *duty* to work and his obligation to help the hospital to support him. The patients receive only a pittance of pocket-money and the profits of the work go to the hospital.

There is a more subtle disadvantage. One of the grave criticisms of the old asylum was that it dehumanised the patient—treated him as something less than a person. Active-therapy hospitals also do this, though in a more subtle way. Decisions about the patient's life still rest with the staff; he is still a pawn in their hands. He is not expected to show spontaneity or responsibility and there is no attempt to let him govern his own life.

Though there is much to learn from active therapy as regards the employment of patients, I feel that the authoritarian side of the Dutch practice is damaging to the patient's chances of recovering initiative and independence.

The Therapeutic Community

In recent years a different concept has grown up, based on the work of Sivadon in Paris and T. P. Rees in Croydon. It is most clearly described in a W.H.O. monograph written jointly by them and certain other leaders in this field (World Health Organisation 1953).

Their theoretical framework is that of modern social science, which regards a person less as an isolated individual, inside whom things are happening, than as the central point of a number of social relationships and as a unit in a larger pattern called a society. They hold that the primary defect that brings a person to a mental hospital is desocialisation—a breaking of his links with the society around him. If patients are re-examined as social problems many anomalies become clear; for it is their degree of desocialisation, the degree to which their contacts with society have broken down, that determines whether they remain in hospital—not the actual symptoms they may show. The psychotic process is an important factor in cutting the patient off, but it is only one of them: an institutionalised neurasthenic is far more desocialised and more crippled than a paranoid holding down a job. The function of the mental hospital should be to try to modify the patient's desocialisation. This can be done partly by suppressing the symptoms of psychosis, partly by rearranging his external environment, but most of all by changing his method of social interaction, by giving him a period of training in a special community where he can learn new ways of reacting.

The work of the therapeutic community therefore must be based on two tasks—the reform of desocialisation and the reorganisation of interpersonal relations. This means that great stress is laid on what the patient does and what is done to him.

Rees and Sivadon particularly emphasise certain principles in the handling of patients and the management of the hospital. The patients' individuality must be preserved in the nameless confusion of the hospital; they must be trusted (with freedom, knives, mail, &c.) as far as possible; they should have as much responsibility for their life as possible (running ward committees, organising self-government, &c.); they should be active (there must be a full programme of available work); and interpersonal emotional reaction must be fostered.

Since the patient is being trained to return to the outside community, the hospital should resemble this as nearly as it can. Every way in which the hospital life diverges from that outside must be scrutinised; and under this scrutiny many of the old restrictive asylum practices—locked doors, forbidden sharp tools, no matches, no razors, no mixing of the sexes—are seen to be unnecessary. But the baby is not thrown out with the bath water; some of the old rules were sound because they relieved the patient of the social stresses that had contributed to his breakdown. The patient comes to hospital to escape from the strains of life, and at first the strains must be lifted from him; he must be relieved of responsibility, of anxiety, of competition, of sexual demands, of the tug of human ties. The newly admitted patient is given rest—bed rest if necessary and sedation, perhaps even narcosis; the long-term patient is not required to face competition as he must do outside. The therapeutic community, though it should resemble the outside community in its freedoms and responsibilities, should not contain the stresses, the cruelties, and

the penalties of the outside world. Hostility must be met with patience, violence with restraint but not with anger, childishness with understanding, feeble attempts at independence with encouragement. It is in this way that the therapeutic community is to be different from the outside world—in the personal influences that surround the patient.

This, however, puts a great strain on the social structure of the traditional mental hospital. It calls for the development of the skills and attitudes of the modern psychiatric nurse—that "specialist in interpersonal relations"—and means that the old mental-hospital staff's ideas of restraint and security and the generally trained nurse's drive to force the patient into infantile dependence have alike to be resisted. It involves, too, the administrative and works staff of the hospital, who have to learn gradually to abandon patronising and dehumanising attitudes to the patients; for they, as much as the nurses, are part of the patients' environment.

CONCLUSIONS

In discussing the possible functions of the mental hospital I have shown those which I think it can meet. In discussing the differing ideals I have shown how these may conflict. My own preference will have become obvious. I feel that the therapeutic-community ideal, as propounded by Rees and Sivadon, is the approach which is the most valuable at the present day. Based on modern knowledge and social theory, it puts forward a consistent and practical approach to the central problem of the mental hospital—the resocialisation of the person segregated or abandoned by society because of his mental disturbance. Clearly this approach means many changes in our traditional ways of handling our patients but it can do more than anything else to resolve the pressures, and meet the demands, to which the mental hospital is now exposed.

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INSULIN ZINC SUSPENSION

FOUR YEARS' EXPERIENCE

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THE first clinical evaluation of insulin zinc suspensions (I.Z.S.) ('Lente' insulins) was reported from Hvidøre Hospital (Hallas-Møller et al. 1951 1952, 1954). Since then our results have been confirmed by many investigators—in England, among others, by Lawrence and Oakley (1953), Oakley (1953), and Gurling et al. (1955). Our trials have covered more than 1800 patients; and I describe the results here in 1000 patients taken in alphabetical order from our index.

This survey includes all patients who agreed to transfer to the new preparations or whose doctors had them admitted to hospital for this purpose. No selection was made according to the patient's condition. Patients who for many years had been well controlled on other preparations and who did not wish to transfer continued with the insulin hitherto used; and are not included here.

TABLE I—PERCENTAGE DISTRIBUTION OF 1000 CASES OF DIABETES (512 MALES, 488 FEMALES) BY PLACE OF RESIDENCE

Place	Males (%)	Females (%)
Capital	58	61
Other towns	27	22
Country	15	17

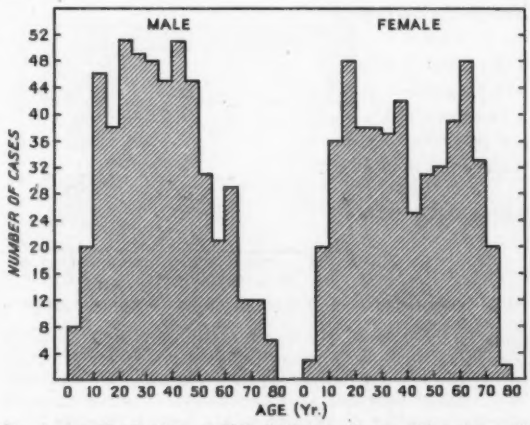

Fig. 1—Age-distribution of 1000 diabetic patients: 512 males; 488 females.

MATERIAL AND METHODS

90% of the patients were admitted to hospital for control on the new preparations; only 10% were controlled as outpatients. I outline here the results of transfer to I.Z.S. without, however, comparing the control with that obtainable by means of other preparations; such a comparison would necessitate patients staying in hospital longer than most of them can manage. In the present trial the average stay in hospital was 12 days. The patients were allowed up so far as their condition permitted. Diet was regulated and adjusted according to individual need. A diet of 2000 calories was, for example, composed of carbohydrates 200 g., fat 93 g., and protein 87 g.

The patients comprised 512 males and 488 females, whose age-distribution is shown in fig. 1. The proportion of women aged 50–70 years was relatively high; and most of these patients were overweight.

The distribution of patients by place of residence is shown in table I.

Fig. 2 shows the duration of the diabetes. 10% of the patients had had the disease for less than a year, whereas in 50% it had been apparent for more than 10 years.

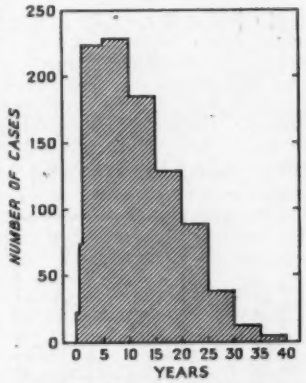

Fig. 2—Duration of diabetes in 1000 patients.

Results

96% of the patients were maintained on one injection daily (fig. 3) comprising 74% controlled on I.Z.S. (insulin lente), 12% controlled on I.Z.S. plus amorphous I.Z.S. (insulin semilente), and 8% controlled on I.Z.S. plus crystalline I.Z.S. (insulin ultralente); only a very small proportion were controlled on amorphous I.Z.S. or crystalline I.Z.S. alone. 4% of all the patients needed two injections daily. The average daily dose was about 40 units.

Table II compares the dosages of insulin before control on I.Z.S. preparations with the dosages of I.Z.S. prepara-

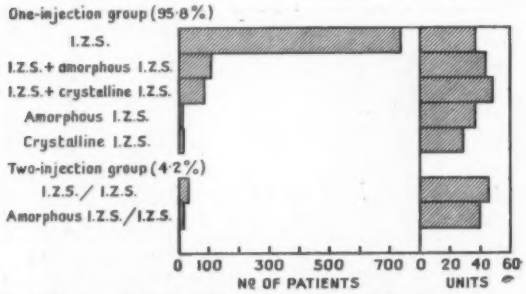

Fig. 3—Forms and doses of I.Z.S. preparations in 1000 cases of diabetes.

tions which proved the most satisfactory. This table also shows that 55% of the patients previously received two injections daily, whereas with the I.Z.S. preparations 96% needed only one injection daily. The insulin dose was decreased by an average of 11 units on transfer from two injections of other preparations to one injection of the I.Z.S. preparations, and by an average of 12 units on transfer from two injections of other preparations to two injections of I.Z.S. preparations.

The control was evaluated by means of 27,000 blood-sugar analyses in the 887 inpatients; in each case an average of 30 blood-sugar determinations were made in the course of 6 successive days. Blood was withdrawn for estimation of blood-sugar six times daily—before

TABLE II—INSULIN DOSAGE (UNITS) IN PREVIOUS RÉGIME AND I.Z.S. RÉGIME

Previous			I.Z.S.			Av. change
Daily inj.	No. of pts.	Av. dose	Daily inj.	No. of pts.	Av. dose	
One	314	40	One	311	37	− 3
			Two	3	39	− 1
Two	545	58	One	506	47	− 11
			Two	39	46	− 12
Nil	141	—	One	141	16	+ 16

meals and at 2 A.M. The daily recordings of the blood-sugar levels proved valuable in treatment. Fig. 4 shows six blood-sugar levels recorded over 6 days, and distribution of these levels by percentages. The optimal blood-sugar level is taken to be 75–200 mg. per 100 ml.; the better the control the greater the proportion of blood-sugar values within this range (in the example shown in fig. 4 this proportion is 82%).

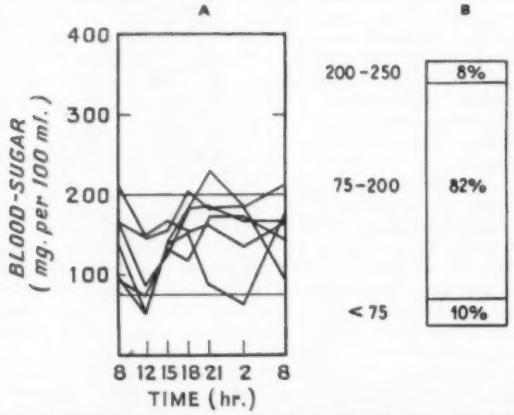

Fig. 4—Example of good control by I.Z.S., 40 units daily at 8 a.m., in a 48-year-old patient: A, blood-sugar levels on each of 5 successive days; B, percentage distribution of blood-sugar levels.

An example of less satisfactory control is shown in fig. 5: only 49% of the measured values fell in the optimal range.

Fig. 6 gives the distribution, in percentages, of the blood-sugar levels related to the dosage of I.Z.S. preparations. The most satisfactory control was obtained with the lowest dosages.

When the cases were divided according to the patients' ages and duration of the disease no material differences between the blood-sugar levels in the various groups were evident.

From fig. 7 it can be seen that a greater proportion of the blood-sugar results fell into the optimal range in patients receiving one injection daily than in patients

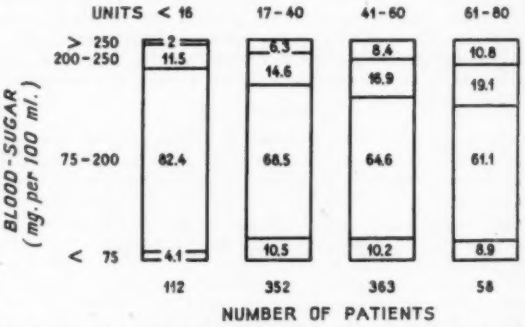

Fig. 6—Percentage distribution of blood-sugar levels related to insulin dosage in 885 cases.

receiving two injections daily; but the latter group (about 4% of all the patients) consisted mainly of cases that were difficult to control.

Blood-sugar levels are related to dietary calories in fig. 8. A high-calorie diet involves a greater requirement of insulin than a diet low in calories; and accordingly control was least satisfactory in those with the highest calorie intakes.

Fig. 9 compares the blood-sugar levels in patients with and without retinopathy and nephropathy. This figure shows that the presence or absence of these complications was unrelated to the blood-sugar level.

Sugar excretion is shown in fig. 10. The group without complications had the highest sugar excretion, whereas the two groups with nephropathy had the lowest. Yet the blood-sugar levels were identical in these groups (fig. 9)—which suggests that patients with complications had a high renal threshold for sugar.

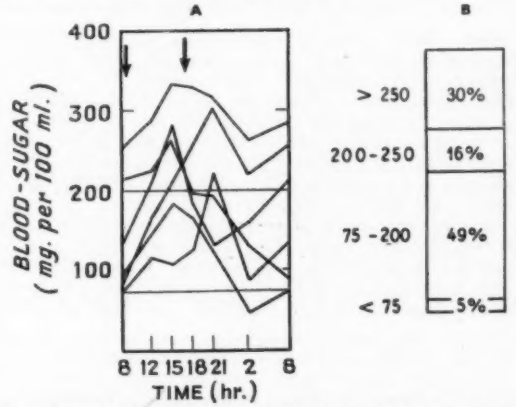

Fig. 5—Example of poor control by I.Z.S., 40 units in the morning and 10 units in the evening, in a 26-year-old patient: A, blood-sugar levels on each of 5 successive days; B, percentage distribution of blood-sugar levels.

This is confirmed by fig. 11 in which 691 patients are classified according to their sugar threshold, which is assessed as high, low, or normal.* The average excretion corresponds satisfactorily to such grouping; for example, 89% of the patients with a high threshold had a sugar excretion of less than 20 g. per 24 hours.

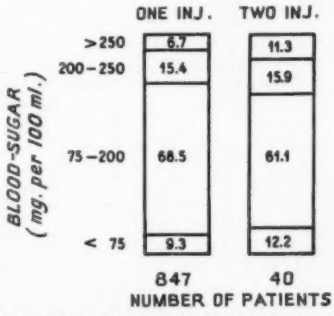

Fig. 7—Percentage distribution of blood-sugar levels in 887 cases controlled on I.Z.S. preparations.

The tendency to acidosis in the three different groups is apparent from fig. 11. Acetone was found most commonly in the urine of patients with a low threshold, whereas in patients with a high threshold acetonuria was never found.

Follow-up

Of the 1000 patients 39% were followed up as outpatients, and on an average nine examinations were carried out; 23% were observed after readmission to hospital; and in 34% contact was maintained by means of questionnaires. It was not possible to obtain information from 3·8%. The average period of observation was 18 months.

Table III shows that 82% of the patients in the one-injection group had continued with this régime. In the group which originally had received two injections daily 63% had maintained this régime, while 19% had been transferred to once-daily injections.

Of the group from whom no information was obtainable 19 had died: 2 owing to complications of diabetes, and 13 owing to intercurrent diseases or through accidents; in 4 cases the cause of death could not be ascertained. No information was received of deaths associated with coma or hypoglycæmia. A statement of health during the observation period was available from 791 patients. Of this number 88% stated they were in good health, 8% that they were fairly well, and 4% that they were in poor health (chiefly owing to complications).

* The threshold was recorded as low when the blood-sugar level had been below 150 mg. per 100 ml. for 12 hours and the urine during the past 6 hours had contained abundant sugar (> 0·8 g. per 100 ml.). The threshold was recorded high when the blood-sugar level had been above 200 mg. per 100 ml. without sugar (or with only traces of sugar) present in the corresponding voidings of urine.

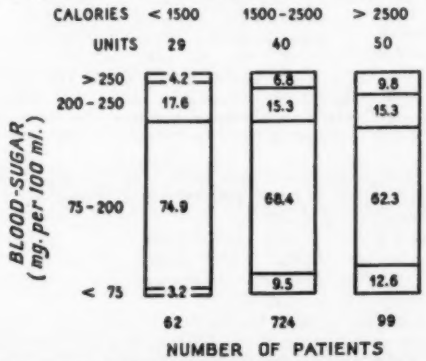

Fig. 8—Percentage distribution of blood-sugar levels related to calorie intake in 885 patients.

Coma occurred in 4% during the period of observation; but, excluding coma due to intercurrent infections and forgotten injections, the figure was 1%. Serious hypoglycæmic manifestations occurred in 4%, and less serious attacks of insulin shock in about 11%.

The patients were given a regulated diet during the observation period. Table IV shows how difficult it is for overweight patients to reduce their weight to normal values. Only 33% of the overweight patients lost 2 kg. or more during the period. Patients of normal weight numbered 520—i.e., 59% of the total. In 43% of these the body-weight did not change during the observation period, whereas 35% gained more than 2 kg. and 17% lost more than 2 kg.

The insulin dosages during the observation period are shown in table V. In 46% of the patients the daily dose had to be increased by about 9 units. Included in the material, however, are 95 new cases and, as is known, the insulin requirement of such patients increases during the first 2 years.

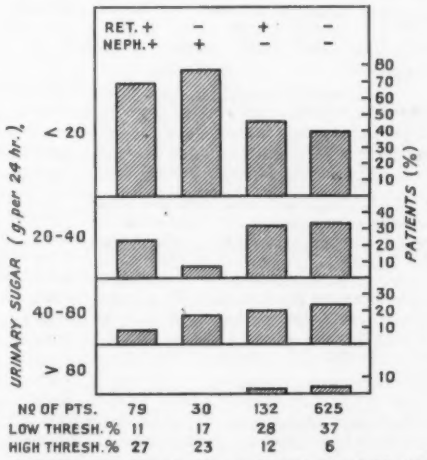

Fig. 10—Urinary excretion of sugar and renal thresholds for sugar related to retinopathy and nephropathy in 866 cases.

Cases of nephropathy and retinopathy diagnosed during the observation period are shown in fig. 12. As expected, in most cases these complications became apparent after the disease had existed for more than 10 years.

Local reactions were rare (0·8% of cases); mostly they were allergic reactions in patients in whom insulin treatment had been started recently. The reactions usually disappeared after 4–6 weeks' treatment. 1 patient showed clear signs of hypersensitivity to I.Z.S.

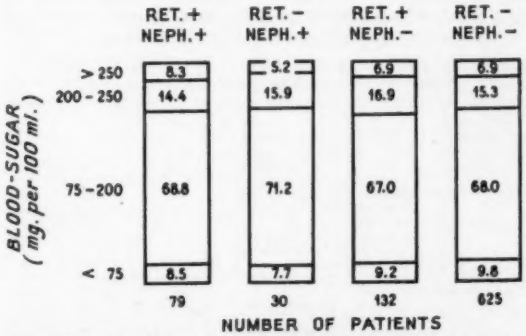

Fig. 9—Percentage distribution of blood-sugar levels related to retinopathy and nephropathy in 866 cases.

preparations derived from ox-pancreas; no hypersensitivity was observed when porcine I.Z.S. preparations were given.

Lipoatrophy occurred after administration of I.Z.S. preparations in 1·4% of the cases.

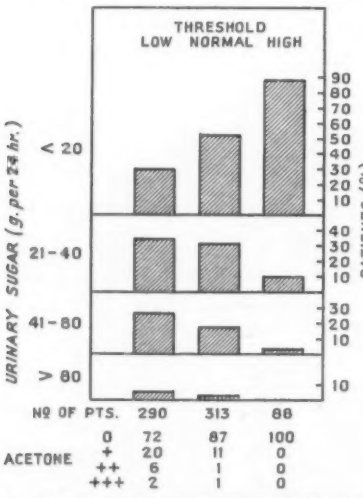

Fig. 11—Urinary sugar excretion, renal thresholds for sugar and acetonuria in 691 patients.

Acetone + indicates that single urine samples during trial period (average 6 days) gave weak acetone reaction. ++ indicates that single samples yielded moderate acetone reaction. +++ indicates that single samples gave strong acetone reaction (or that samples in most cases contained moderate amounts of acetone).

Discussion

A special effort was made to test the new preparations in one-injection therapy; but twice-daily injections were given (usually each of I.Z.S.) in cases where once-daily injections did not give satisfactory results during inpatient or outpatient treatment. Most of this second group were "brittle" diabetics, and few of these were better controlled with twice-daily than with once-daily injections. A particularly difficult group consisted of the psychically labile patients whose control in hospital entailed no problems but who were quickly brought out of balance on return to their normal environment. Patients were observed whose sugar excretion in hospital amounted to only a few grammes daily but who on return home excreted 200 g. per day and had ketosis. In patients of this type two injections daily may afford a greater margin of safety without, however, restoring the blood-sugar to satisfactory values.

Once-daily injections should not be given in preference to twice-daily injections at the cost of quality of control. Experience of I.Z.S. preparations has not confirmed the assertion that patients requiring more than 40 units of insulin a day cannot be satisfactorily controlled on once-daily injections. In the present series difficulties arising during control were due more often to the patient's lability than to the dose of insulin. Children under 10 years, with an average daily insulin requirement of 29 units, received one injection in 88% of cases; whereas

TABLE III—FOLLOW-UP SURVEY OF 1000 PATIENTS ON I.Z.S. AFTER OBSERVATION PERIOD (AV. 18 MONTHS)

Original no. of injections daily	Follow-up Régime	No.	%
One (958 pts.)	Same	791	82
	Two inj. of I.Z.S. prep.	64	7
	No insulin	8	1
	One inj. of other prep.	9	1
	Two inj. of other prep.	56	6
	No information	30	3
Two (42 pts.)	Same	26	63
	One inj. of I.Z.S. prep.	8	19
	No insulin	0	0
	Two inj. of other prep.	6	14
	No information	2	4

TABLE IV—BODY-WEIGHT INITIALLY AND AFTER OBSERVATION PERIOD (AV. 18 MONTHS)

Initial —	Pts. No.	Pts. %	After obs. period —	Pts. No.	Pts. % of initial total
Overweight > 10%	225	26	Loss of weight ≥ 2 kg.	75	33
Normal	520	59	Constant	226	43
Underweight > 10%	133	15	Gain of weight ≥ 2 kg.	69	52

TABLE V—INSULIN DOSAGE AFTER OBSERVATION PERIOD (AV. 18 MONTHS), COMPARED WITH DOSAGE AT INITIAL CONTROL ON I.Z.S., IN 881 PATIENTS

—	Increase	Constant	Decrease
Proportion of pts. (%)	46	33	21
Av. daily change (units)	8·9	—	6·3

the remaining patients, maintained, on average, on 39 units daily, received one injection in 97% of cases.

Sugar excretion should, of course, be kept as low as possible, but it should be remembered that the renal threshold for sugar is not alike in all patients. It is striking that sugar excretion was greater in patients without complications than in those with complications. This suggests that reduced renal function is the cause of the lesser glycosuria. The possibility that complications are more liable to arise in patients with a high sugar threshold is also worth considering (Schlichtkrull 1955). Clearly a high sugar threshold was connected with absence of a tendency to acidosis, whereas acidosis was commoner in patients with a low sugar threshold.

With I.Z.S. preparations, as with other insulin preparations, there are some patients who, despite careful supervision, cannot be satisfactorily balanced on either one or two injections daily. The possibility, however, of satisfying the daily insulin requirement with one injection appears to have been achieved with I.Z.S. or I.Z.S. combined with amorphous I.Z.S. or crystalline I.Z.S. It is no more difficult to achieve control with I.Z.S. preparations than with other insulins; on the contrary, such a large proportion of patients can be satisfactorily controlled on I.Z.S. alone that treatment is greatly simplified. If a combination of I.Z.S. preparations proves necessary and if the patient is unable to mix these in the syringe, the doctor can prepare the desired combination in a vial.

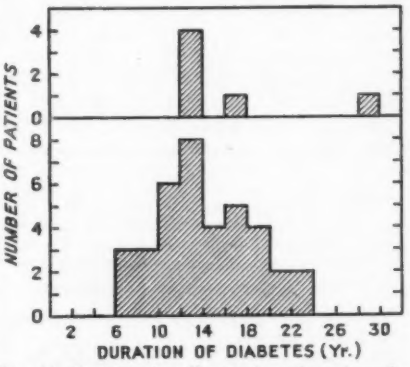

Fig. 12—Nephropathy (6 cases) and retinopathy (37 cases) diagnosed during observation period, averaging 18 months, related to duration of diabetes.

In some the dose of insulin was reduced on transfer to the I.Z.S. preparations; but both during and after adjustment most patients were more closely supervised than usual and their dietary habits were thus precisely regu-

lated. Rarely, however, especially among older, resistant cases, the I.Z.S. preparations seemed to be incompletely utilised, possibly on account of insulin-antagonistic enzymes. In such cases fast-acting preparations (e.g., amorphous I.Z.S. or plain insulin) are preferable.

Local reactions were rare and gave rise to no therapeutic problems.

Summary

1000 diabetic patients were controlled on insulin zinc suspensions (' Lente ' insulins). 90% of these patients were admitted to Hvidore Hospital for the initial adjustment. The immediate results of transfer to this treatment were determined with the help in each case of an average of thirty blood-sugar tests during 6 successive days. The quality of the control was estimated by the percentage distribution of these blood-sugar values in four different levels; the optimal level was taken as 75–200 mg. per 100 ml. In addition glycosuria was normally determined in four voidings of urine per day.

96% of the patients were controlled on one daily injection of the I.Z.S. preparations, with an average dose of 40 units. In the one-injection group I.Z.S. alone was given in 74%, I.Z.S. plus amorphous I.Z.S. in 12%, and I.Z.S. plus crystalline I.Z.S. in 8%. Amorphous I.Z.S. or crystalline I.Z.S. alone were used only in exceptional cases. In the two-injection group (4% of all patients) I.Z.S. was generally given both morning and evening.

Follow-up after an average period of 18 months showed that 82% of the patients who originally had been controlled on one injection daily had been maintained on this régime. Of the group originally receiving two injections daily 19% had later been transferred to one injection daily.

Urinary excretion of sugar was greatest in patients without retinopathy or nephropathy; but the blood sugar level of patients with and without these complications was, on average, the same.

With preparations of I.Z.S. the results were satisfactory, even in most cases where control had previously been difficult.

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LENTE INSULIN

FOUR YEARS' EXPERIENCE

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THE addition of small amounts of zinc to insulin in an acetate buffer depresses the solubility of the insulin and prolongs its absorption from the site of injection (Hallas-Møller et al. 1951). By adjustment of the pH a quick-acting amorphous (' Semilente ') insulin and a long-acting crystalline (' Ultralente ') preparation were made. These insulin-zinc suspensions were stable on mixing, and in the proportions of 30% amorphous to 70% crystalline they form the preparation ' Lente ' insulin (I.Z.S.).

Reports from this clinic (Nabarro and Stowers 1953) and from other hospitals (Lawrence and Oakley 1953, Murray and Wilson 1953) have described the effect of lente insulin on the blood-sugar level and on the urinary output of glucose. Short-term studies (Oakley 1953, Gurling et al. 1955, Stowers and Nabarro 1955) have shown that a single daily injection of I.Z.S. could be used successfully in the management of many diabetic patients, but several workers experienced difficulties on transfer to I.Z.S. or later in the management of the diabetes.

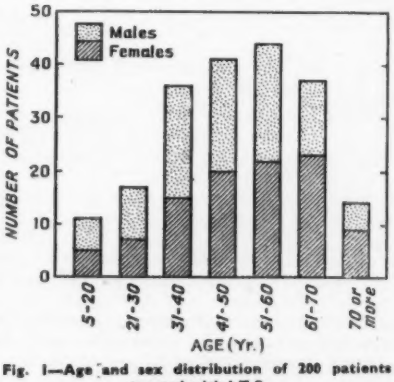

Fig. 1—Age and sex distribution of 200 patients treated with I.Z.S.

Long and varied experience of a new form of treatment is necessary before its value can be assessed, especially in the management of diabetics, in whom the severity of the diabetes and the care given to its control are so varied. We review here our experience of lente insulin over the past four years.

Material and Methods

200 patients attending the diabetic clinic at University College Hospital were treated with I.Z.S. for six months or longer in 1952–56. The age and sex distribution of these patients is shown in fig. 1. Only a small proportion of patients attending the clinic were transferred to I.Z.S., because it was decided not to alter treatment when the diabetic control was entirely satisfactory, unless the patient wanted to change from multiple daily injections of one of the older insulins to a single injection of I.Z.S. The length of treatment varied from six months to four years, the majority (149) having been maintained on I.Z.S. for more than a year (table I). Only patients who had been treated with I.Z.S. for more than six months were included in the series.

For purposes of comparison the severity of the diabetic state has been divided arbitrarily into three grades according to the insulin requirements: grade I requiring 0–20 units a day (49 patients), grade II 21–60 units (93 patients), and grade III more than 60 units (58 patients). Before transfer to I.Z.S. 102 patients were managed on protamine zinc insulin (P.Z.I.) or a mixture of P.Z.I. and soluble insulin (S.I.); 28 were on globin insulin (G.I.) in single or twice-daily injections; and 11 were on multiple daily injections of S.I. Of the 59 patients who had not received insulin previously 38 had been controlled by diet alone and 21 were new untreated patients. Treatment with I.Z.S. was started for the reasons given in table II.

Treatment with I.Z.S. was begun in the outpatient diabetic clinic in 177 patients, only 23 being admitted to hospital for this purpose. The calorie value of the diet

TABLE I—LENGTH OF TREATMENT WITH I.Z.S. AND GRADES OF SEVERITY OF DIABETES

Grade of diabetes	Dosage of I.Z.S. (units daily)	No. of patients on I.Z.S.			Total
		6–12 mos.	1–2 yr.	2–4 yr.	
I	0–20	20	22	7	49
II	21–60	26	38	29	93
III	60+	5	18	35	58
Total	..	51	78	71	200

TABLE II—REASONS FOR TRANSFER TO LENTE INSULIN

Grade of diabetes	No. of patients transferred to I.Z.S.				
	Trial of I.Z.S.	Convenience of single injection	Hypoglycæmia on old insulin	Poor diabetic control	Local skin reactions
I	25	3	2	16	3
II	26	24	22	19	2
III	23	2	6	25	2
Total	74	29	30	60	7

and the proportions of carbohydrate, fat, and protein were not changed, but the distribution of the food throughout the day was altered to provide substantial snacks at 11 A.M. and 10 P.M., the size of these varying with the nature of the patient's work. The insulin used was the lente mixture of 30% I.Z.S. amorphous (semilente) and 70% I.Z.S. crystalline (ultralente) given in a single injection an hour before breakfast. The few patients who were treated with different proportions of semilente and ultralente are not included in the present series, and those who had two injections of I.Z.S. a day have also been excluded from this study, because experience of this variety of treatment is not yet sufficient to assess its value. The starting dose of I.Z.S. was usually equal to the total previous daily dose of insulin plus 10%, and this was subsequently adjusted as necessary. For the first few weeks patients attended the clinic at weekly intervals, gradually lengthening to intervals of two or three months.

The differences in action between I.Z.S. and the older types of insulin were carefully explained to each patient, and they had two or more interviews with the dietitian to make certain that the proper adjustments to the diet had been made. The urine sugar was estimated twice daily, and the patients were weighed at weekly intervals in the early stages of the treatment. Serial blood-sugar estimations were used to assist control when the management by urine tests was unsatisfactory.

The state of diabetic control was assessed according to the presence and severity of diabetic symptoms, by the degree of glycosuria, and by the relation of the body-weight to the estimated ideal weight for the patient. The frequency, time, and severity of hypoglycæmic reactions were noted, and records were also made of any episodes of ketosis and of local skin reactions. From these data an over-all opinion was reached about whether the patient's condition was better, unchanged, or worse on lente insulin. Any difficulties on transfer were noted.

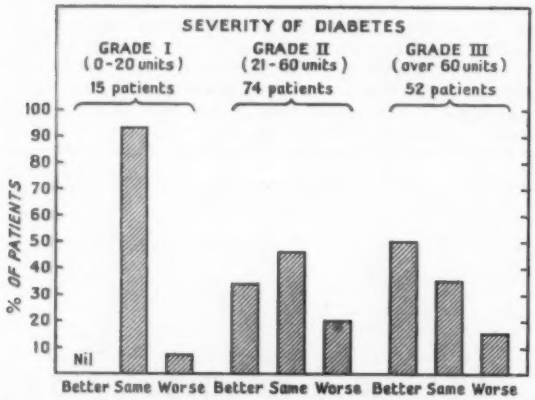

Fig. 2—Comparison of diabetic control on I.Z.S. with that on previous insulin, in relation to severity of diabetes.

Results

Diabetic Control

Of the 141 patients who had previously been treated with other types of insulin, the control of the diabetes on I.Z.S. was satisfactory in 117 (83%), 51 (36%) being improved, 66 (47%) unchanged, and 24 (17%) worse on lente.

A comparison of the diabetic control achieved on I.Z.S. with that of the previous insulin régime, grouped according to the severity of the diabetes, is shown in fig. 2. The control of mild diabetes in patients requiring up to 20 units of I.Z.S. a day who had previously received insulin was satisfactory in 93%; but there was little opportunity for improvement in this small group of 15 patients, of whom 14 were unchanged, 1 worse, and none was improved on I.Z.S. The condition of the 74 patients with moderately severe diabetes (21–60 units a day) who had previously received insulin was satisfactory in 59 (80%), 25 (34%) being improved, 34 (46%) unchanged, and 15 (20%) not so well on I.Z.S. In the 52 patients with severe diabetes previously treated with insulin who required more than 60 units of I.Z.S. a day, control was satisfactory in 44 (85%), 26 (50%) being improved, 18 (35%) unchanged, and 8 (15%) worse on lente insulin.

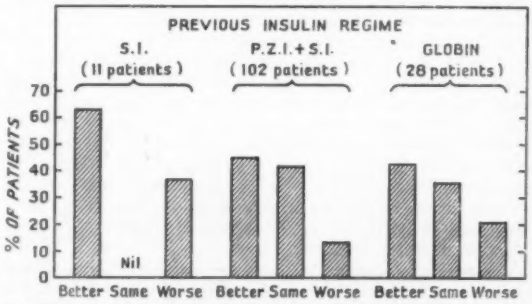

Fig. 3—Comparison of diabetic control on I.Z.S. with that on previous insulin in relation to type of insulin régime.

It will be seen that the results on I.Z.S. were good, irrespective of the severity of the diabetes, but it should be noted that very few patients needing more than 80 units of insulin a day were treated with lente insulin. Whether the insulin requirements were large or small, a significant proportion (17%) of patients were better controlled on their old insulin than on I.Z.S.

A comparison of the diabetic control on I.Z.S. in relation to the previous insulin is given in fig. 3. The results obtained after transfer from P.Z.I. or from P.Z.I. plus S.I. (102 patients, 87% satisfactory) and from globin insulin (28 patients, 79% satisfactory) were both good. The group transferred from multiple daily injections of S.I. (11 patients, 63% satisfactory) is too small to be of great significance, but in 4 (37%) of these the diabetic control was not so good on I.Z.S. However, these were unstable diabetics who had been managed on multiple injections of S.I. because treatment with long-acting insulins had proved unsatisfactory.

Change in Insulin Requirements on Transfer to I.Z.S.

The data relating to the change in insulin requirements on transfer to I.Z.S. is summarised in table III. Of the 141 patients transferred from other insulins to I.Z.S. 11 were omitted because they were clearly not balanced on their previous insulin. In 56% of the remaining 130 patients the amount of I.Z.S. required for good control was within ±10% of the previous dose of one of the older insulins. However, 28% of patients needed a considerably increased dosage of plus 10–50%, and in 8% of patients the amount of I.Z.S. necessary for balancing was 50–100% greater than with the previous insulin. In only 8% of

TABLE III—CHANGE IN INSULIN REQUIREMENTS ON TRANSFER TO I.Z.S.

Previous type of insulin	P.Z.I. + S.I.	P.Z.	S.I.	G.I.	No. of patients
Mean dosage (units)	60	31	39	55	..
Mean change on transfer (units and %)	+7 (+12%)	+7 (+23%)	+7 (+20%)	+10 (+19%)	..
Patients on same dosage ±10% (no. and %) ..	39 (53%)	9 (50%)	6 (55%)	19 (68%)	73 (56%)
Patients on increased dosage ±10–50% (no. and %) ..	21 (29%)	6 (33%)	3 (27%)	6 (21%)	36 (28%)
Patients on increased dosage over +50% (no. and %) ..	4 (5%)	2 (11%)	1 (9%)	3 (11%)	10 (8%)
Patients on decreased dosage −10–30% (no. and %) ..	9 (13%)	1 (6%)	1 (9%)	0 (0%)	11 (8%)
Total of patients..	73	18	11	28	130

patients was the quantity of I.Z.S. required less than that of the insulin formerly used. The distribution of the type of change in insulin dosage was the same whatever the previous kind of insulin (table III).

Hypoglycæmic Reactions

Hypoglycæmic reactions were experienced by 104 (52%) of the patients while on lente insulin, the majority (71%) being mild attacks. The symptoms of hypoglycæmia on I.Z.S. were similar to those produced by other insulins. The onset was generally recognised by the patient (89%). However, 12 patients did not notice the early symptoms and were later brought to hospital for treatment in the casualty department. Insulin reactions produced by I.Z.S. developed at various times, as follows: midday (10 A.M.–3 P.M.) 41%, evening (4 P.M.–midnight) 24%, and early morning (midnight–6 A.M.) 35%.

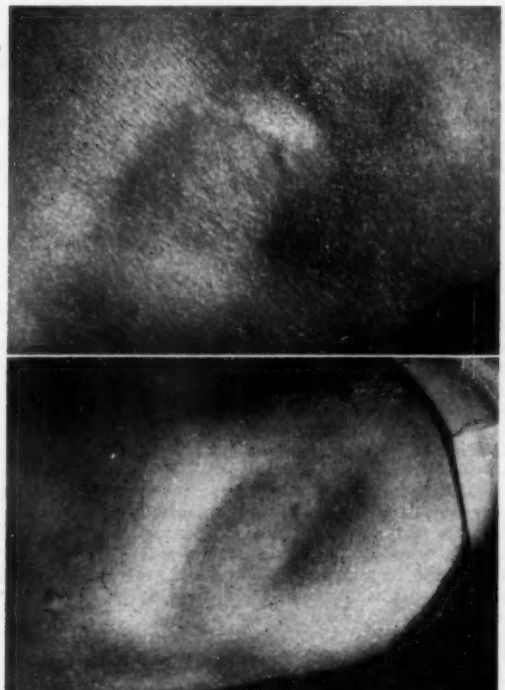

Fig. 4—Lateral aspect of upper thigh, showing local fat-atrophy at site of injection of I.Z.S

96 (48%) patients did not experience any form of hypoglycæmic reaction either on their old insulin or on I.Z.S. (table IV). In 22 (11%) the incidence and severity of insulin reactions were unchanged by transfer to I.Z.S., and in 47 (23·5%) patients reactions on I.Z.S. were definitely less troublesome. In 83% of patients on I.Z.S. the results were satisfactory in relation to hypoglycæmic reactions. However, it is important to note that in 26 (16%) patients insulin reactions were considerably worse or more frequent on I.Z.S. than on their previous insulin. There were few insulin reactions in grade-I diabetics and the incidence of such attacks on I.Z.S. was about the same in grades II and III.

The experience of hypoglycæmic reactions on I.Z.S. differed in relation to the previous type of insulin (table IV). On transfer from globin insulin 90% of the patients were better or unchanged as regards insulin reactions, 54% being improved and only 10% being worse on I.Z.S. Transfer from P.Z.I. plus S.I. was slightly less successful, 82% being better or unchanged, 30% improved, and 18%

TABLE IV—COMPARISON OF HYPOGLYCÆMIC REACTIONS IN PATIENTS ON I.Z.S. WITH THOSE ON THEIR PREVIOUS RÉGIME

Change in hypoglycæmic reactions on transfer to I.Z.S.	No. of patients on previous insulin			No insulin	Total of patients
	P.Z.I. + S.I.	S.I.	G.I.		
No reactions on either régime ..	38 (38%)	3 (27%)	5 (18%)	50 (85%)	96 (48·0%)
Better on I.Z.S. ..	30 (30%)	2 (18%)	15 (54%)	0	47 (23·5%)
Same on I.Z.S. ..	15 (14%)	2 (18%)	5 (18%)	0	22 (11·0%)
Worse on I.Z.S. ..	19 (18%)	4 (37%)	3 (10%)	9 (15%)	35 (17·5%)
Total ..	102	11	28	59	200

worse. Of the 11 patients transferred from S.I. 2 had less trouble from insulin reactions on I.Z.S., and 4 were worse. It should again be noted that in this small number of patients changed from S.I. attempts had previously been made to manage them on other long-acting insulins without success.

Diabetic Ketosis

4 patients with grade-III diabetes on I.Z.S. were admitted to hospital in 1952–56 in ketosis, only 1 of them being in coma. 9 patients from the same group had been admitted in ketosis while on their previous insulin régime over a period of four years. 5 of the patients with grade-II diabetes had been treated in hospital for ketosis in four years while on their old insulin, whereas none of these developed ketosis while on I.Z.S. There were no instances of ketosis in the patients with grade-I diabetes.

Local Skin Reactions

7 patients had persistent local skin reactions (itching, lumps, and fat-atrophy) to the insulin of the earlier régime (1 on globulin and 6 on P.Z.I.). None of these patients developed any form of local reaction after transfer to I.Z.S. 1 patient, who had not previously been given insulin, had well-marked fat-atrophy on I.Z.S. (fig. 4).

Difficulties on Transfer

No patient in this trial had to be admitted to hospital because of ketosis or hypoglycæmia precipitated by the transfer to I.Z.S. Minor troubles were experienced by 20 (10%) patients in grades II and III 12 (6%) having hypoglycæmic reactions in the early weeks after transfer, and 8 (4%) having symptoms due to poor control of their diabetes.

Treatment Abandoned

Treatment with I.Z.S. was abandoned in 9 (4%) patients. In 4 this was done at the patient's request because they felt better on their previous régime of two

daily injections of P.Z.I. and S.I., or of globin insulin. The amount of work done by these 4 patients varied greatly from day to day, and they were better controlled on a double-injection technique. 3 patients experienced recurrent hypoglycæmic reactions on I.Z.S. and were also returned to two daily injections of P.Z.I. and S.I. 1 patient developed pulmonary tuberculosis and was better controlled on two daily injections of globin insulin. In the 9th patient the diabetes always became unbalanced during minor intercurrent infections despite increasing the dosage of I.Z.S. by up to 100%. After returning to treatment with P.Z.I. and S.I. his diabetes was well controlled.

Discussion

Short-term studies have already indicated that most diabetics can be satisfactorily managed on a single daily injection of I.Z.S., and that the diabetic control is generally equal to or better than that obtained with other insulins (Lawrence and Oakley 1953, Murray and Wilson 1953, Haunz 1955, Sprague and Kilby 1955, Stowers and Nabarro 1955). Gurling et al. (1955), in a twelve months' study, and Hallas-Møller et al. (1954), in observations over thee years, have also reported favourably on lente insulin, but the latter workers do not analyse their material in detail. On the contrary, Fitzgerald et al. (1954) found that a third of their patients were less well controlled on I.Z.S. Nabarro and Stowers (1953) reported satisfactory control in mild diabetes, but of 19 patients who required more than 48 units of I.Z.S. a day control was unsatisfactory in 10 (50%).

The present observations made on 200 diabetics over a period of four years have clearly shown that most patients (83%) could be well controlled on a single injection of I.Z.S., and that many (36%) were improved by the transfer from their old insulins. With an intelligent and coöperative patient the change to I.Z.S. can be made safely under supervision from the outpatient diabetic clinic, provided that (1) the diet is suitably rearranged; (2) the insulin requirements are less than 80 units a day; (3) urine tests are done twice a day, and the insulin dose is adjusted accordingly; (4) the diabetic clinic is attended at weekly intervals for the first few weeks; and (5) patients particularly liable to hypoglycæmia or to ketosis are excluded.

If a patient is well managed and content on his old insulin, there is no outstanding advantage to be gained by transfer to I.Z.S. However, there are patients in whom diabetic control is never really satisfactory on a single injection of P.Z.I., and although this may have been given for years, a trial of I.Z.S. is advised.

A married woman, aged 60, had been managed for eight years on a 1700-calorie diet and one injection of P.Z.I. 32 units daily. She was underweight and had occasional pruritus vulvæ associated with a glycosuria of 1–2 g. per 100 ml. Since transfer to a 2000-calorie diet and one injection of I.Z.S. 36 units she has gained 20 lb. in two years, the glycosuria has decreased to 0·00–0·25 g. per 100 ml., and the pruritus vulvæ has completely resolved.

Hypoglycæmic Reactions

While many diabetics who are managed on a diet and insulin have occasional mild hypoglycæmic reactions, it is particularly important to avoid recurrent or severe insulin reactions. Apart from the obvious risk of bodily injury during an attack, such reactions destroy the patient's self-confidence and often have unfortunate social consequences, such as the loss of a good job. Moreover fear of insulin reactions may lead to undertreatment of the diabetes and thus favour the development of ketosis. For these reasons we have made a detailed study of hypoglycæmic attacks in our patients on I.Z.S.

In 83% of all the patients the experience in relation to hypoglycæmia on I.Z.S. was satisfactory. In 96 patients there were no reactions on either insulin. In 47 of the remaining 104 patients hypoglycæmic reactions were less troublesome on I.Z.S. For example:

A man, aged 44, had been managed on a 2500-calorie diet and globin insulin 40–0–12. Despite numerous adjustments of the diet and insulin he had recurrent hypoglycæmic reactions. He had experienced similar attacks when treated with two injections of S.I. a day. He was transferred to one injection of I.Z.S. 52 units, and on this he has excellent control of the diabetes and a glycosuria of 0·0–0·5 g. per 100 ml. He has now been on I.Z.S. for two and a half years and has had no further insulin reactions.

Severe reactions were less frequent on I.Z.S., 71% being mild. The onset was usually recognised by the patient. This is a practical point of the greatest importance because the patients could take appropriate action to prevent the development of a severe hypoglycæmic reaction. As a consequence only 12 of 200 patients attended hospital with hypoglycæmia in four years, and none had to be admitted.

Although the over-all result as regards hypoglycæmic attacks was very satisfactory, in 17% of patients insulin reactions were worse or more frequent on I.Z.S. These failures were more common in severe unstable diabetics. For example:

A man, aged 33, had been well controlled on a 2000-calorie diet and P.Z.I. 48 units plus S.I. 36 units before breakfast. On this régime he had occasional mild insulin reactions. For trial purposes he was transferred as an inpatient to I.Z.S. 72 units, and on discharge his diabetes was well balanced. Some weeks later he had recurrent insulin reactions, always in the "rush-hours" between 4 and 6 P.M. The onset of these reactions was unrecognised by the patient, and twice he was found in a confused state at an Underground Railway terminus, having missed his proper destination.

The distribution of insulin reactions throughout the day was nearly uniform, probably because the diets had been arranged to provide snacks in the mid-morning and in the evening. Unlike those from P.Z.I. the evening and early-morning hypoglycæmic reactions from I.Z.S. were usually mild. Of patients on I.Z.S. who experienced reactions 41% had them between 10 A.M. and 3 P.M.—a very inconvenient time for most workers. The remedy for this was to adjust the time and size of the mid-morning snack.

There are few detailed accounts of the hypoglycæmic reactions produced by I.Z.S., but Oakley (1953), Hallas-Møller et al. (1954), Gurling et al. (1955), and Haunz (1955) have also reported favourably.

Insulin Dosage

Some observers have reported that the required dosage of I.Z.S. was of the same order as the total amount of the previously used insulin preparations (Hallas-Møller et al. 1954, Haunz 1955, Sprague and Kilby 1955), whereas Nabarro and Stowers (1953), Venning (1954), Gurling et al. (1955), and Stowers and Nabarro (1955), found that many patients needed a considerably increased amount of I.Z.S., particularly those who had been managed on a single injection of P.Z.I. In our experience, in 56% of patients the required dose of I.Z.S. was within ±10% of that of the old type of insulin, but 28% of patients needed 10–50% more, and 8% required a 50–100% increase on transfer to I.Z.S. Because of this change in insulin dosage we generally start on a 10% increase of I.Z.S. and insist on a minimum of twice-daily urine tests and recording in the early stages after transfer, and instruct the patient to adjust the insulin dose accordingly. At this stage the patient must be seen in the clinic at intervals of not longer than a week.

Diabetic Ketosis

Little information is available about the development of ketosis in patients on lente insulin. Gurling et al. (1955) refer briefly to a group of patients who are insensitive to all long-acting insulins and cannot be treated with

I.Z.S. for any long time without developing glycosuria and ketosis.

In the present series only 4 of 200 patients on I.Z.S. were admitted to hospital with ketosis in four years. Of 14 patients from the same group who had experienced severe ketosis during a similar period on their old insulin, these were the only 4 who developed ketosis while on I.Z.S. For example:

A spinster, aged 26, was originally treated with a 2000-calorie diet and P.Z.I. 40 units plus S.I. 20 units before breakfast. After repeated admissions in diabetic ketosis she was transferred to three injections of S.I. a day, only to have recurrent mild hypoglycæmic attacks. Since transfer to I.Z.S. 56 units three years ago she has had no further episodes of ketosis and only a few mild insulin reactions.

However, in some patients who normally required more than 60 units of I.Z.S. a day, in response to minor upper respiratory infections or to simple dental extractions, or sometimes without apparent cause, the requirements of I.Z.S. would temporarily increase by as much as 100%. In these circumstances such patients developed increasing glycosuria and mild ketosis. For example:

A man, aged 20, had been well controlled for two years on a 2500-calorie diet and I.Z.S. 92 units a day. He developed a mild sore throat with a temperature of 99°F and increased his insulin to control heavy glycosuria. After four days, although his insulin had been increased to I.Z.S. 196 units a day, he had glycosuria of 2 g. per 100 ml., a strongly positive Rothera's test, and severe thirst and polyuria. He was admitted and transferred to S.I. 28–28–28. In twenty-four hours his diabetes was well controlled and his urine free from ketones and sugar.

A man, aged 37, had been balanced on a 2500-calorie diet and I.Z.S. 96 units. During a common cold his diabetes became uncontrolled; and, although he had increased his insulin to I.Z.S. 208 units a day, there was still glycosuria of 2 g. per 100 ml. and a strongly positive Rothera's test. S.I. 30–30–30 controlled the glycosuria in forty-eight hours, and in five days he was discharged on I.Z.S. 96 units.

This is, of course, a common experience with severe unstable diabetics on any long-acting insulin, but it appeared to be more frequent on I.Z.S. It is our practice to provide such patients with a reserve of S.I. to use in addition to I.Z.S. whenever their diabetes becomes temporarily unstabilised. This modification of treatment is usually successful; but, if it fails, the patients are transferred to a régime of P.Z.I. plus S.I. A.M. and S.I. P.M.

Lente insulin has no place in the treatment of established severe diabetic ketosis.

Local Skin Reactions

There is great variation in the reported incidence of local skin reactions at the site of insulin injection. Marble (1952) has noted that this varies from 10% to 58% according to the thoroughness with which patients are examined. In our experience mild local skin reactions to the older insulin preparations are very common in the first weeks of treatment and tend to disappear later. In the present study note was only made of persistent local reactions which were sufficiently uncomfortable for the patient to complain. The incidence (1 in 200) of erythema, itching, persistent lumps, or fat-atrophy at the site of injection of I.Z.S. was much lower than that (7 in 130) experienced by the same groups of patients while receiving injections of P.Z.I. or of globin insulin. Furthermore, of the 7 patients who had developed skin reactions on the old insulins none subsequently showed any local reaction to I.Z.S. This confirms the experience of Lawrence and Oakley (1953), Murray and Wilson (1953), Hallas-Møller et al. (1954), Peck et al. (1954), Sprague and Kilby (1955), and Stowers and Nabarro (1955). This result was expected because I.Z.S. contains no foreign protein other than the insulin and the incidence of allergic reactions has long been known to be greatly decreased by multiple recrystallisation of the insulin. Lente insulin can therefore be especially recommended for patients who have troublesome skin reactions to other insulin preparations. However, 1 of our patients, who had not previously been given insulin, developed local fat-atrophy at the injection sites of lente insulin (fig. 4).

Our experience of the treatment of diabetes with lente insulin in childhood and adolescence is limited to 11 patients, in whom it was very satisfactory. Jensen (1953), Ferguson (1954), and Gurling et al. (1955) have also reported favourable results. The place of I.Z.S. in the management of pregnant diabetics has yet to be ascertained. In the present series two pregnant diabetics were successfully controlled on lente insulin.

Summary

200 diabetic patients were treated with lente insulin and observed for from six months to four years.

The diabetes was controlled satisfactorily in 83% of the patients on transfer to a single daily injection of lente insulin, and in 36% the control was improved.

We wish to thank Dr. K. Hallas-Møller and the Evans Medical Supplies Ltd. for making I.Z.S. available before its general release; Dr. P. Freedman, Dr. J. M. Walshe, and Dr. H. H. Wolff for their help in the diabetic clinic; and Miss C. F. Harris and Miss G. M. Cave-Brown-Cave for their work on the diabetes diets.

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TREATMENT OF HODGKIN'S GRANULOMA, CHRONIC LYMPHATIC LEUKÆMIA, POLYCYTHÆMIA VERA, AND OTHER RETICULOSES WITH TRIETHYLENETHIOPHOSPHORAMIDE

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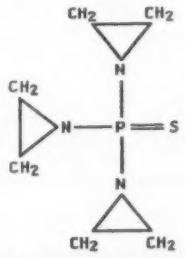
TRIETHYLENETHIOPHOSPHORAMIDE (thio-T.E.P.A.) was found to produce beneficial effects in some patients with chronic or subacute myeloid and lymphatic leukæmia and Hodgkin's disease but to be ineffective in several patients with acute leukæmia (Shay et al. 1953, Zara-

fonetis et al. 1955). The advantages claimed for thio-T.E.P.A. (fig. 1) over the intravenous alkylamines (nitrogen mustards) were that it could be given intramuscularly without pain or local discomfort; it did not cause nausea or vomiting; and associated depression of the bone-marrow was reversible on discontinuance of the treatment.



Triethylenethiophosphoramide
Fig. 1.

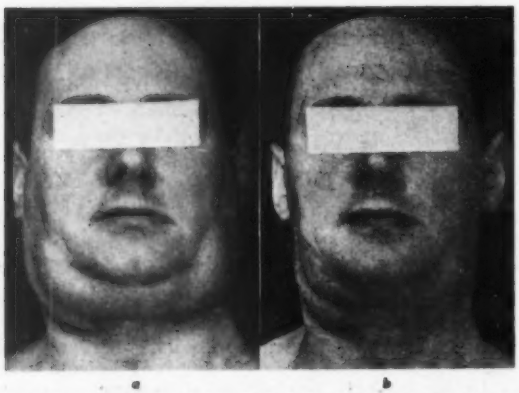
Smith et al. (1955), who gave thio-T.E.P.A. to 21 children with leukæmia, lymphosarcoma, and Hodgkin's disease, found that it temporarily controlled lymphosarcoma and chronic forms of leukæmia but was definitely contra-indicated in acute leukæmia in children.

We describe here our experience with thio-T.E.P.A. in 54 patients with various diseases of the hæmopoietic and reticulo-endothelial systems—polycythæmia vera, chronic lymphatic leukæmia, lymphoid reticulosis, follicular lymphoreticulosis, Hodgkin's granuloma, reticulum-cell reticulosis, and reticulosarcoma.

Because of the consistently poor results reported for acute leukæmia no such cases were treated, and because satisfactory oral and intravenous preparations are available for chronic myeloid leukæmia (Gardikas et al. 1955) such cases were also excluded from this trial. The terminology used for the various forms of reticulosis is based on the clinical and histological criteria propounded by Israëls (1953).

Dosage and Control

Thio-T.E.P.A. was used dissolved in physiological saline solution; a convenient strength was 10 mg. per ml. Stored at 0–4°C the solution remained potent for two or three months; if a precipitate formed, the solution was rejected. It was given intramuscularly with an ordinary needle into any convenient site; intravenous administration had also been reported to be satisfactory. A preliminary injection of 25 mg. was given intramuscularly, followed by further injections of 25 or 50 mg. on alternate days, provided the first injection produced no undesirable side-effects. The total dosage required varied from patient to patient and with the particular form of blood dyscrasia (see below). Treatment was controlled by routine full blood-counts. Most of the patients were ambulant and attending as outpatients.



a b

Fig. 2—Case A, with chronic lymphatic leukæmia, showing considerable cervical lymphadenopathy: a, untreated; b, two weeks after course of thio-T.E.P.A. 75 mg., showing considerably less lymphadenopathy.

With this dosage of thio-T.E.P.A. nausea resulted in 7 patients (13%), vomiting in 4 (7·4%), and anorexia in 17 (31·5%). These untoward effects started within the first forty-eight hours after the first injections, and usually ceased within a few days of stopping treatment. In 1 patient there was a local sensitivity reaction to thio-T.E.P.A., consisting of erythema, irritation, and swelling around the injection site; this recurred when a different site was used for a further injection. A delayed sensitivity reaction was seen in 1 other patient some ten days after the first injection, consisting of generalised pruritus and a vesicular eruption distributed over the arms, abdomen, medial aspects of thighs, and scrotum, and between the toes. The itching and eruption were partially relieved by anti-histamines and cleared completely in fourteen days.

Results

CHRONIC LYMPHATIC LEUKÆMIA (8 CASES)

In 6 of 8 patients with chronic lymphatic leukæmia the administration of thio-T.E.P.A. led to diminution of gland masses, spleen, and white-cell counts, with accompanying symptomatic improvement.

In 3 of these patients considerable generalised lymphadenopathy and splenomegaly were associated with high white-cell counts—402,000, 102,000, and 123,000 per c.mm. After treatment with thio-T.E.P.A. the lymph-glands and spleen were much diminished, and the white-cell counts were reduced to 18,400, 32,000, and 67,000 per c.mm. respectively. One of these patients (case A) is described in detail below.

In the remaining 3 patients lymphadenopathy and splenomegaly were pronounced, but the white-cell counts were not very high—14,500, 17,400, and 22,000 per c.mm. After treatment with thio-T.E.P.A. the lymph-glands and spleen were considerably diminished, and the white-cell counts dropped to 4300, 9000, and 8000 per c.mm. respectively.

Case A.—A man, aged 45, was found to have chronic lymphatic leukæmia in February, 1949. He had moderate generalised lymphadenopathy and splenomegaly (2 cm. below costal margin). Blood examination: red cells 5,350,000 per c.mm., Hb 14·8 g. per 100 ml., white cells 8500 per c.mm. (polymorphs 29·0%, lymphocytes 67·5%, monocytes 3·0%, eosinophils 0·5%). He complained of no symptoms and, without treatment, remained well until April, 1955. His glands had gradually increased in size and were enormous (fig. 2*a*), and both liver and spleen were considerably enlarged to well below the umbilical level. He complained of feeling weaker, and his appetite had deteriorated. Blood examination: red cells 3,080,000 per c.mm., Hb 9·6 g. per 100 ml., white cells 123,000 per c.mm. (lymphocytes 99·5%, monocytes 0·5%). A course of thio-T.E.P.A. (total 75 mg.) was given, which caused anorexia and nausea for four days and was followed by considerable reduction of lymphadenopathy, splenomegaly, and hepatomegaly (fig. 2*b*). The patient has remained improved for three months. His Hb increased to 10·8 g. per 100 ml., and his white-cell count dropped to 67,000 per c.mm. (differential count unchanged).

Case B.—A woman, aged 66, had complained of malaise for twelve months and, on examination, was found to have generalised lymphadenopathy with hepatosplenomegaly. Blood examination: red cells 3,900,000 per c.mm., Hb 10·1 g. per 100 ml., white cells 169,000 per c. mm. (polymorphs 5%, lymphocytes 93%, "blasts" 2%), platelets 94,000 per c.mm. After a course of 125 mg. of thio-T.E.P.A. there was some diminution of lymph-glands, spleen, and liver, and a fall in the white-cell count. The patient developed bleeding into the skin and from mucosæ about twelve days after treatment was stopped, and in spite of several blood-transfusions she died about sixteen days later. Necropsy revealed hæmorrhages into the skin and mucosæ of mouth, œsophagus, stomach, and large bowel.

The administration of thio-T.E.P.A. to patients with chronic lymphatic leukæmia requires more careful hæmatological supervision than is necessary in Hodgkin's granuloma and other reticuloses, and usually treatment

should not be given when the white-cell count is below 20,000 per c.mm. or the platelet-count below 100,000 per c.mm. In chronic lymphatic leukæmia, after observing the effects of a 25-mg. test dose, we have given an initial course of 50–100 mg. and then stopped treatment for from four to six weeks. If further treatment is required, a second course can then safely be given. In most cases thio-T.E.P.A. had considerable effects on the clinical condition and the lymphadenopathy and lowered the white-cell count but had no appreciable effect on the abnormal differential count.

In the remaining 2 patients with chronic lymphatic leukæmia thio-T.E.P.A. produced an irreversible aplasia of the platelet-forming elements, leading to death from widespread purpura in about sixteen and eighteen days after treatment had been stopped. In both cases the initial platelet-counts were low—94,000 and 100,000 per c.mm. At the time of death the white-cell counts were still high—16,900 and 75,000 per c.mm.

It seems inadvisable to use thio-T.E.P.A. in chronic lymphatic leukæmia when the platelet-count is below 100,000 per c.mm. Thio-T.E.P.A. may have a more profoundly depressant effect on the platelets than on the other blood elements, and in such cases it is advisable to use intravenous tri-(2-chlorethyl)-amine hydrochloride ('Trilekamin').

LYMPHOID RETICULOSIS (3 CASES)

In all 3 cases of lymphoid reticulosis treatment with thio-T.E.P.A. considerably diminished the enlarged lymph-glands and spleen, and the improvements have been maintained for ten months, eight months, and sixteen months.

Case C.—A housewife, aged 47, was first seen in November, 1953, with three years' history of swellings in the neck. On examination there was moderate generalised lymphadenopathy. Blood examination: red cells 4,880,000 per c.mm., Hb 14·9 g. per 100 ml., white cells 4050 per c.mm. (polymorphs 79·5%, lymphocytes 18·0%, monocytes 2·5%). Myelograms and gland biopsy confirmed the diagnosis of lymphoid reticulosis.

Without treatment she remained well until June, 1955, when she complained of a dull ache in the right inguinal fossa and nausea, and she had vomited twice. She also complained of pain down the back of the right leg as far as the knee. On examination she had pyrexia (100·8°F) and considerably enlarged and tender right superficial and deep iliac lymph-glands, which were visible and easily palpable through her abdominal wall. The blood picture was still the same, and after a course of thio-T.E.P.A. 75 mg. the temperature, nausea, vomiting, and pain subsided, and the superficial and deep iliac glands regressed completely. The patient has remained symptom-free for ten months.

FOLLICULAR LYMPHORETICULOSIS (3 CASES)

3 cases of follicular lymphoreticulosis were treated with thio-T.E.P.A. So far as could be determined, only peripheral lymph-glands were involved, and in all there was considerable regression of the enlargement after treatment, maintained so far for nine months, nine months, and seven months.

Case D.—A man, aged 63, had noticed swelling in neck and axillary regions for a few months. He felt well in himself, and on examination there was moderate generalised lymph-gland enlargement but no splenomegaly or hepatomegaly. Blood examination: Hb 14·5 g. per 100 ml., white cells 7800 per c.mm. (polymorphs 67·0%, lymphocytes 20·0%, monocytes 11·5%, eosinophils 1·0%, basophils 0·5%). Gland biopsy showed follicular lymphoreticulosis. A course of thio-T.E.P.A. 125 mg. led to gradual complete resolution of the glands. This improvement has been maintained for nine months.

RETICULUM-CELL RETICULOSIS (3 CASES)

Only 1 of 3 treated cases of reticulum-cell reticulosis showed improvement, and this was only very transitory.

Case E.—A female nurse, aged 58, was found to have moderate generalised enlargement of lymph-glands, moderate splenomegaly, and considerable hepatomegaly. She also had a transitory irritating generalised erythematous rash, which faded leaving the skin stained brown. Blood examination: red cells 3,150,000 per c.mm., Hb 10·5 g. per 100 ml., white cells 7000 per c.mm. (polymorphs 64·0%, lymphocytes 5·0%, monocytes 6·5%, eosinophils 24·5%). Gland biopsy showed histological changes typical of reticulum-cell reticulosis, and a myelogram showed only a moderate increase in eosinophils. The clinical course was rapidly downhill, with pyrexia, progressive loss in weight, deepening skin pigmentation, and progressive hepatomegaly. A course of thio-T.E.P.A. 150 mg. led to temporary clinical improvement, and the pyrexia subsided. The peripheral lymphadenopathy, splenomegaly, and hepatomegaly were slightly diminished. This partial remission lasted about five weeks and was followed by a rapid downhill course unaffected by further treatment with thio-T.E.P.A.

RETICULOSARCOMA AND MYELOID RETICULOSIS

Thio-T.E.P.A. had no effect on the clinical course of 1 patient with myeloid reticulosis and 2 patients with reticulosarcoma.

HODGKIN'S GRANULOMA (18 CASES)

It was decided to treat only those cases of Hodgkin's disease which fulfilled the histological criteria of Hodgkin's granuloma described by Jackson and Parker (1947). The more benign paragranulomatous type of Hodgkin's disease which these workers originally described was not included, because the prognosis without treatment is so good that the assessment of the effects of any treatment is difficult. Table I shows the clinical features before treatment was instituted, the glands involved, and the presence or absence of hepatomegaly and/or splenomegaly. Of 18 cases 6 showed complete regression and 5 partial regression of lymphadenopathy and/or splenomegaly. In 8 cases thio-T.E.P.A. had no beneficial effects on the clinical condition or on the gland masses. Thio-T.E.P.A. had no effects on cases with hilar adenopathy and hepatomegaly; and, with the exception of 2 cases, splenomegaly was not influenced by treatment. The value of thio-T.E.P.A. in the management of Hodgkin's granuloma is illustrated by the following examples of cases that responded to treatment.

Case 5 (table I).—A man, aged 18, had moderate tonsillar and supraclavicular lymphadenopathy. Spleen and liver

TABLE I—EFFECTS OF THIO-T.E.P.A. ON HODGKIN'S GRANULOMA

Case no.	Sex	Age (yr.)	Enlarged glands before treatment							Total dosage of thio-T.E.P.A. (mg.)
			Cervical	Axillary	Inguinal	Hilar	Abdominal	Splenomegaly	Hepato-splenomegaly	
Complete regression of glands and spleen after treatment:										
1	M	49	+ +	0	0	0	0	0	0	250
2	F	28	+	+	0	0	0	0	0	75
3	F	32	+ +	+ +	0	0	0	0	0	75
4	M	43	0	0	0	0	0	+	0	125
5	M	18	+ +	0	0	0	0	0	0	250
6	M	47	+	+	0	0	0	+	0	125
Partial response to treatment:										
7	M	25	+ +	+	0	0	0	0	0	125
8	M	29	+ + +	+	0	0	0	0	0	175
9	M	54	+ +	+ +	0	0	0	+ +	0	175
10	M	51	+ +	+ +	0	0	0	0	0	200
11	M	46	+ +	+ +	0	0	0	0	0	225
No response to treatment:										
12	M	21	+ +	+ +	+	+	0	+	+	175
13	M	24	+	+	+	+ +	0	+	+	200
14	M	46	+	+	0	0	+	+	+	175
15	M	44	+	0	0	0	+	+	+	225
16	F	49	0	+	0	+ +	0	0	0	400
17	M	66	+ +	+ +	+	+ +	+	+	+	225
18	F	34	0	0	0	+ + +	0	0	0	225

0, not palpable. +, + +, + + +, degrees of enlargement.

were impalpable, and there was no hilar adenopathy. Gland biopsy showed typical Hodgkin's granuloma. Blood examination: red cells 4,350,000 per c.mm., Hb 14·8 g. per 100 ml., white cells 3000 per c.mm. (polymorphs 70·0%, lymphocytes 17·0%, monocytes 10·5%, eosinophils 2·5%). Thio-T.E.P.A. 50 mg. was given intramuscularly twice weekly for two weeks—a total of 225 mg. The cervical and axillary glands regressed completely, and the remission has lasted so far eleven months.

Case 11 (table I).—A man, aged 46, was found to have Hodgkin's granuloma in June, 1950, when only his cervical glands were involved. He complained of no symptoms and was left untreated. In April, 1954, after an infection of his upper respiratory tract, his cervical glands, particularly his right supraclavicular and right axillary glands, became considerably enlarged. He had anorexia, had lost weight, and had developed considerable œdema of his entire right arm and distension of veins over his right shoulder, neck, and upper arms. There was loss of power, with diminution of tendon-reflexes, in the right arm, with sensory impairment to cotton-wool and pinprick. Evidently his enlarged right supraclavicular and right axillary glands were compressing his brachial plexus and subclavian vessels. His hilar glands were not enlarged, and blood examination showed normal values. A course of thio-T.E.P.A. 225 mg. was given in five divided doses, and during the following four weeks the lymph-gland masses shrank considerably, and the œdema, venous distension, and neurological signs disappeared. This improvement has been maintained for twelve months.

Case 4 (table I).—A man, aged 43, had complained for three months of pruritus, malaise, night sweats, anorexia, loss of weight, and left subcostal pain. On examination he looked ill, temperature 101–103°F, spleen palpable 4 cm. below costal margin. No enlargement of peripheral or hilar lymph-glands. Blood-examination: red cells 3,960,000 per c.mm., Hb 11·1 g. per 100 ml., white cells 4350 per c.mm. (polymorphs 60·0%, lymphocytes 16·5%, monocytes 16·5%, eosinophils 6·0%, basophils 1·0%). Sternal puncture gave a normal myelogram. After extensive investigation no cause for the pyrexia was found, and Hodgkin's disease was provisionally diagnosed, but histological verification was impossible. After a course of thio-T.E.P.A. 125 mg. the patient's temperature fell rapidly, his appetite and general well-being considerably improved, and he gained weight. His spleen became less easily palpable. He has remained symptom-free for seven months.

POLYCYTHÆMIA VERA (14 CASES)

Table II shows the effects of thio-T.E.P.A. on the blood-counts of 14 patients with polycythæmia vera. The object of treating such patients was to obviate or to reduce the numbers of venesections required to control the total red-cell mass and so to minimise the risks of hæmorrhagic and thrombotic complications. Thio-T.E.P.A. also diminished the associated splenomegaly and hepatomegaly.

Case 24 (table II).—A housewife, aged 63, had typical polycythæmia vera with considerable splenomegaly (18 cm. below costal margin) and hepatomegaly (10 cm. below costal margin). Blood examination: red cells 7,450,000 per c.mm., Hb 14·7 g. per 100 ml., white cells 29,000 per c.mm. (polymorphs 85·0%, lymphocytes 6·5%, monocytes 3·5%, eosinophils 3·5%, basophils 1·0%, metamyelocytes 0·5%), and platelets 417,000 per c.mm. A course of thio-T.E.P.A. 225 mg. lead to considerable alleviation of abdominal discomfort and reduction in size of spleen (4 cm. below costal margin) and liver (2 cm. below costal margin). Blood examination six weeks after treatment showed red cells 4,000,000 per c.mm., Hb 11·0 g. per 100 ml., and white cells 2850 per c.mm. Normal blood-counts have been maintained for eleven months.

TABLE III—SUMMARY OF EFFECTS OF THIO-T.E.P.A.

Disease	Dosage	Contra-indications
Polycythæmia vera	25 mg. I.M. on alternate days to a total of 100 mg. Not repeated before 6 weeks	None
Hodgkin's granuloma	25–50 mg. I.M. twice weekly to a total of 200 mg. Not repeated before 4 weeks	Much splenomegaly and hepatomegaly and enlarged mediastinal glands; thrombocytopenia less than 100,000 per c.mm.
Chronic lymphatic leukæmia	25 mg. twice weekly to a total of 100 mg., not repeated before 6 weeks	Thrombocytopenia less than 100,000 per c.mm.
Lymphoid reticulosis	25 mg. twice weekly to a total of 100 mg., not repeated before 6 weeks	Thrombocytopenia less than 100,000 per c.mm.
Follicular lymphoreticulosis	25 mg. twice weekly to a total of 100 mg., not repeated before 6 weeks	Much splenomegaly and hepatomegaly; thrombocytopenia less than 100,000 per c.mm.

Careful hæmatological control is necessary in treating polycythæmia vera with thio-T.E.P.A. because, after treatment, there is a substantial decrease in the red cells, white cells, platelets, and hæmoglobin, which may continue from four to six weeks after treatment has been stopped. We recommend an initial course of 50–100 mg. given in two or four doses. If treatment does not reduce the red cells to the desired level, a further course can be safely administered after an interval of from four to six weeks.

All 14 treated patients derived considerable symptomatic improvement and satisfactory control of the red-cell mass, and the improved blood values, as shown in table III, have been maintained without further treatment for periods ranging from seven to fourteen months. In 1 patient (case 19, table II) a second course of thio-T.E.P.A. was necessary about ten months after the first course of treatment, and after 100 mg. of thio-T.E.P.A. a second remission resulted which has lasted so far for eleven months. The results in the treatment of polycythæmia vera have been encouraging, and further remissions can be produced, as illustrated by case 19.

TABLE II—EFFECTS OF THIO-T.E.P.A. ON POLYCYTHÆMIA VERA

Case no.	Age (yr.)	Sex	Previous treatment	Before treatment: Red cells (millions per c.mm.)	Before treatment: Hb (g. per 100 ml.)	Before treatment: White cells (per c.mm.)	Total dosage of thio-T.E.P.A. (mg.) and no. of courses	After treatment: Hb (g. per 100 ml.)	After treatment: Red cells (millions per c.mm.)	After treatment: White cells (per c.mm.)	Remission (mos.)
19	47	F	V.	6·6	(1) 18·8	12,950	(1) 250 (3)	13·1	4·3	5900	(1) 10
〃			T.E.M.	5·9	(2) 18·2		100 (1)	15·7	4·6	5550	(2) 11*
20	63	F	None	7·73	17·9	15,600	175 (2)	15·1	6·1	3200	10*
21	52	M	None	8·7	22·9	6700	300 (3)	18·3	5·7	4200	14*
22	50	M	V., N.M.	6·9	19·1	9700	200 (2)	16·6	5·2	5100	11*
23	52	F	None	6·0	18·2	12,600	200 (2)	15·2	4·5	7600	10*
24	63	F	V., N.M.	7·45	14·7	29,000	225 (2)	11·0	4·0	2850	11*
25	53	F	T.E.M.	7·9	17·0	13,600	225 (2)	11·5	4·1	5700	11*
26	70	M	V.	7·2	13·5	26,450	150 (2)	13·2	5·9	16,550	16
27	61	M	V., T.E.M.	7·0	14·2	24,300	75 (1)	13·5	5·6	21,000	7*
28	47	M	V.	8·6	21·8	6900	100 (1)	14·3	4·9	7000	12*
29	55	F	T.E.M.	8·0	18·2	16,800	100 (1)	16·0	6·4	5600	9*
30	62	F	V., N.M.	7·7	16·6	6600	50 (1)	14·4	5·1	8100	10*
31	55	M	None	8·2	21·0	11,400	100 (1)	15·35	4·8	6000	9*
32	52	M	None	8·5	19·0	9000	175 (2)	17·5	6·1	5000	8*

N.M., nitrogen mustard. T.E.M., triethylenemelamine. V., venesection. * Remission still in progress.

Discussion

Table III summarises the conditions in which thio-T.E.P.A. has been found effective, the dosage recommended, the time interval before it is safe to repeat the course, and the complications which render thio-T.E.P.A. less effective or contra-indicated.

In the present cases side-effects of thio-T.E.P.A.—e.g., anorexia, nausea, and vomiting—were more common (51·4%) than reported by Shay et al. (1953). To reduce the number of injections and to get the maximal effect possible, we used larger individual doses, and this might explain this difference. In chronic lymphatic leukæmia and probably in other conditions where there is thrombocytopenia (platelets less than 100,000 per c.mm.) we have not found it advisable or safe to use thio-T.E.P.A.

The preliminary results suggest that thio-T.E.P.A. may have a place in the management of polycythæmia vera. In all the treated cases there was considerable symptomatic improvement, reduction in hepatosplenomegaly, and satisfactory control of the total red-cell mass, without the need for venesections, for up to fourteen months.

There is a real need for an effective compound which can be given intramuscularly or, preferably, by mouth in Hodgkin's disease, chronic lymphatic leukæmia, and other reticuloses, where the patient's general condition and poor veins make it difficult to use intravenous mustard therapy. β-naphthyl-di-(2-chlorethyl)-amine (or R48) was used for this type of case after its introduction by Haddow et al. (1948), but its action was too mild, as is that of substance C.B. 1348 (*p*-bis(2-chlorethyl)-aminophenylbutyric acid). Attempts to find a substitute for it have not been very successful. Triethylenemelamine has too uncertain an action, and individual tolerance of it varies considerably (Wilkinson and Gardikas 1951).

Thio-T.E.P.A. was found easy to administer and relatively easy to control, except in the 2 described cases of chronic lymphatic leukæmia with initially low platelet-counts. We consider that, provided there is adequate hæmatological control with particular emphasis on the platelet-counts, thio-T.E.P.A. may have a place in the management of some cases of chronic lymphatic leukæmia, Hodgkin's disease, and other reticuloses. When there is more widespread involvement of the reticulo-endothelial system, with enlargement of mediastinal glands, spleen, and liver, it is far safer and more reliable to use the intravenous alkylamines (Wilkinson 1953, 1955). Thio-T.E.P.A. produced no beneficial effects in reticulum-cell reticulosis, myeloid reticulosis, and reticulosarcoma, for which intravenous tri-2-chlorethylamine hydrochloride (trilekamin) is still the best available treatment.

Summary

54 patients with various diseases of the hæmopoietic and reticulo-endothelial systems were treated with a nitrogen-mustard preparation, triethylenethiophosphoramide (thio-T.E.P.A.), which is suitable for intramuscular administration.

Thio-T.E.P.A. produced good clinical and hæmatological remissions in polycythæmia vera for periods of up to fourteen months; and, when further treatment was needed, further remissions were produced.

Thio-T.E.P.A. was also effective in some cases of Hodgkin's granuloma, lymphoid reticulosis, and follicular lymphoreticulosis where the disease was detectable mainly in peripheral glands, but it was not so effective when the mediastinal glands, liver, and spleen were involved.

Thio-T.E.P.A. was shown to be capable of diminishing the gland masses, liver, spleen, and white-cell count in chronic lymphatic leukæmia.

Thio-T.E.P.A. should not be given when the platelet-count is low.

We are indebted to Dr. A. L. Walpole, of Imperial Chemicals (Pharmaceutical) Ltd., for supplies of thio-T.E.P.A. This work was done during the tenure of the Sybil Mary Pilkington Research Fellowship by one of us (B. J. L.).

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EFFECT OF CORTICOTROPHIN ON SECRETION OF ALDOSTERONE *

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THE urinary excretion of aldosterone can be related to changes in the volume of body-fluid (Muller et al. 1956a) especially of some extracellular-fluid compartment (Bartter et al. 1956, Muller et al. 1956b). This regulation of the excretion of aldosterone is independent of any effect exerted by corticotrophin. Whereas the secretion of most of the hormones elaborated by the adrenal cortex is controlled by the pituitary gland, aldosterone is, to a great extent, independent of such control.

There is evidence that corticotrophin can stimulate the secretion of aldosterone. Farrell et al. (1955) found a slightly increased amount of aldosterone in the venous blood of the adrenal glands of dogs given corticotrophin, and Liddle et al. (1955) found an increased amount of a sodium-retaining substance in the urine of patients given corticotrophin. Other workers, however, conclude that, in man, corticotrophin does not significantly raise the blood-aldosterone level (Simpson and Tait 1955) or increase the urinary excretion of aldosterone (Axelrad et al. 1954, Venning et al. 1954).

In an attempt to define the exact rôle of corticotrophin in regulating the secretion of aldosterone we studied healthy people maintained on a constant diet and a constant intake of fluid.

Methods

The control periods before each experiment varied from 6 to 10 days. The corticotrophin was either the ordinary or the long-acting preparation of 'Cortrophin' (Organon). The urine was collected for 6, 12, or 24 hours, and sodium and potassium were determined by flame photometry, 17-hydroxycorticoids according to the method of Reddy et al. (1952), and aldosterone by the method of Neher and Wettstein (1955). The blood corticoids were analysed by the method of Nelson and Samuels (1952).

Results

Fig. 1 shows, in a group of patients selected at random and without any metabolic control, the amount of aldosterone excreted in the urine after the administration of corticotrophin. In every case it looks as if the corticotrophin stimulated the secretion of aldosterone,

* This work was made possible by a grant of the Fondation Nationale suisse de la Recherche scientifique.

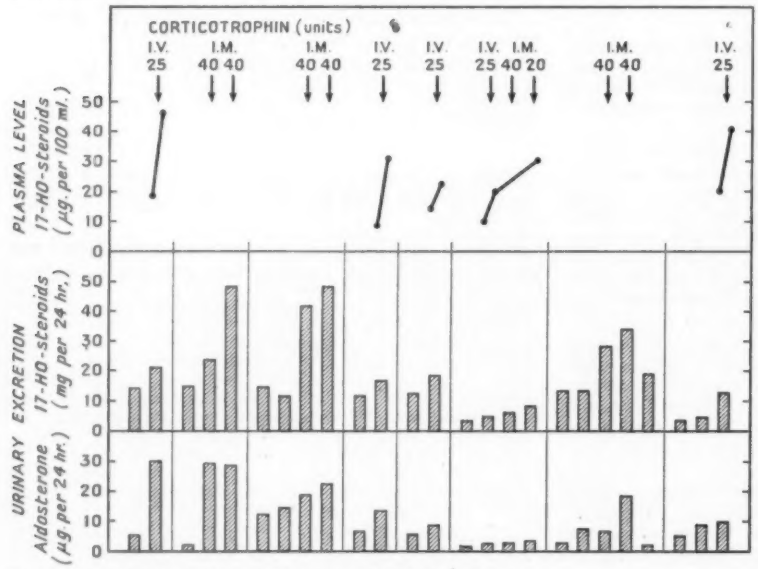

Fig. 1—Effect of corticotrophin on 17-hydroxycorticoids in plasma and in urine. Corticotrophin was administered either intravenously as an 8-hour infusion in 5% glucose or intramuscularly. Plasma-17-hydroxycorticoids were determined just before administration of corticotrophin and 8 hours later.

but the diversity of the results is striking: sometimes the increase in urinary excretion of aldosterone is clear-cut, and sometimes there is no significant increase. The raised urinary and plasma 17-hydroxycorticoid levels after the injection of corticotrophin prove that the adrenal glands have been stimulated effectively.

Encouraged by these results we made further studies under strictly controlled metabolic conditions. Fig. 2 shows the results obtained in two healthy people, of whom one took a normal amount of sodium (110 m.eq.) daily and the other only 10 m.eq. daily. As one would expect, the person who took a normal amount of sodium retained sodium and water after the administration of corticotrophin; this explains his gain in weight. The weight of the person on the low-sodium diet did not change, because he had practically no sodium to retain. Both persons initially lost potassium and excreted more 17-hydroxycorticoids, but their urinary excretion of aldosterone was different. In the man taking a normal amount of sodium the 24-hour urinary excretion of aldosterone does not seem to increase significantly after the administration of corticotrophin; but, if the urine is collected for 12 hours by day and 12 hours by night, the effect of corticotrophin becomes clear: the disturbance and reversal of the diurnal rhythm are evident and unquestionable and establish definitely the influence of corticotrophin on the urinary excretion of aldosterone. An indirect proof of the effect of corticotrophin on aldosterone is the abrupt decrease of its urinary excretion after the withdrawal of corticotrophin. The increased excretion of aldosterone in the person on the low-sodium diet does not need any comment; it is clear-cut and rapid, appearing in the first 12 hours after the injection of corticotrophin.

To assess the rapidity of action of corticotrophin we repeated the experiment on a healthy person on a low-sodium diet (10 m.eq. daily), but this time the urine was collected in 6-hour aliquots during the day. The immediate and considerable increase in the urinary excretion of aldosterone (fig. 3), which followed within 6 hours after the injection of corticotrophin, strongly supports the idea of direct stimulation of the secretion of aldosterone by corticotrophin. As in the preceding experiment, the urinary excretion of aldosterone increased during treatment with corticotrophin and decreased when corticotrophin was withheld.

Another interesting fact, particularly well illustrated in figs. 2 and 3, is the diurnal variation of urinary excretion of aldosterone, larger amounts being excreted during the daytime. In another (unpublished) experiment the urinary excretion of aldosterone reached a peak during the morning hours. This diurnal rhythm of urinary excretion of aldosterone is only detectable under strictly constant metabolic conditions, because the slightest change in either diet or activity alters it. This is in definite contradistinction to the fixed and constant urinary excretion of the 17-hydroxycorticoids.

Though the action of corticotrophin on aldosterone is very

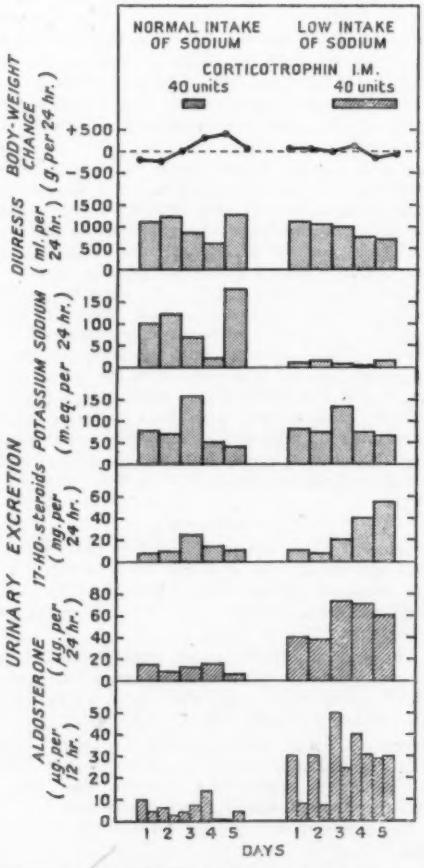

Fig. 2—Effect of long-acting corticotrophin 40 units daily on urinary excretion of aldosterone in two healthy people on diets containing 110 m.eq. and 10 m.eq. of sodium daily.

rapid, its effect seems to be of short duration, and its intensity subsides rather quickly; whereas the opposite is the case for the 17-hydroxycorticoids. Fig. 3 illustrates particularly well the decreasing urinary excretion of aldosterone and the increasing urinary excretion of 17-hydroxycorticoids under treatment with corticotrophin, but after its withdrawal the decrease is slower and less abrupt for the corticoids than for aldosterone. The retention of sodium is therefore initiated by aldosterone and continued by the corticoids.

Figs. 2 and 3 show that the effect of corticotrophin can apparently be increased by a low-sodium diet, and figs. 4 and 5 show that it is increased by the loss of weight following an expansion of body-fluid caused by vasopressin tannate and water. The corticotrophin is injected intramuscularly as the effect of the vasopressin is wearing off and the body-weight is decreasing. We have already shown that, in these circumstances, independent of any effect of corticotrophin, aldosterone progressively increases (Muller et al. 1956a). If corticotrophin is now injected, the urinary excretion of aldosterone increases to six or seven times the control amount, while the 17-hydroxycorticoids show only a threefold increase. As one would expect, the retention of sodium is in accordance with these high levels of aldosterone.

In order to dissociate the two influences (corticotrophin stimulation and volume changes), we repeated the experiments of figs. 4 and 5, but this time the subject continues to gain weight while he is given corticotrophin (fig. 6). Again aldosterone increases but to a much lesser extent. This experiment confirms the dual origin of the urinary aldosterone in the preceding experiments.

Discussion

Our experiments prove that corticotrophin stimulates the adrenal cortex to secrete aldosterone. This fact is not particularly surprising, because Pincus (1955) has shown that corticotrophin intervenes in the transformation of the side-chain of cholesterol, thus acting on a common precursor of hydrocortisone and aldosterone. Why, however, is this response of the adrenal gland to corticotrophin so variable, irregular, and dependent on the experimental conditions?

As we show elsewhere (Muller et al. 1956b) there is a homœostatic corticotrophin-independent regulation of aldosterone through body-fluid shifts. In particular the secretion of aldosterone seems to be related to

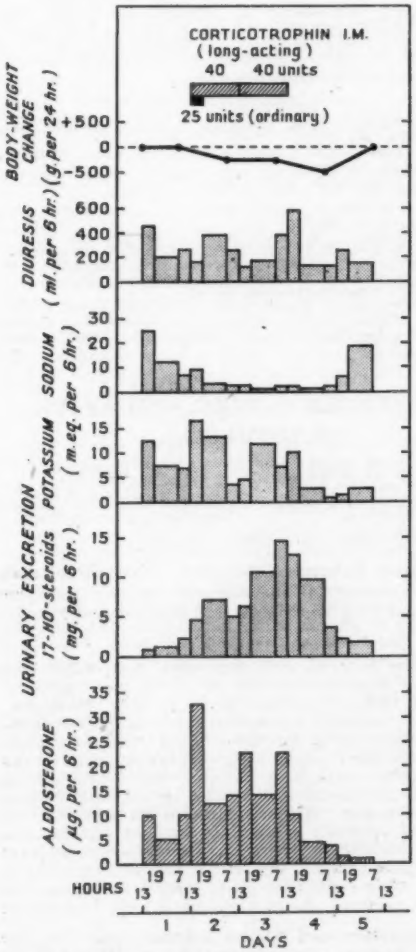

Fig. 3—Effect of corticotrophin (ordinary 25 units, long-acting 40 units) on urinary excretion of aldosterone in a healthy person on a diet containing only 10 m.eq. sodium daily. Urine was collected in 6-hr. or 12-hr. aliquots.

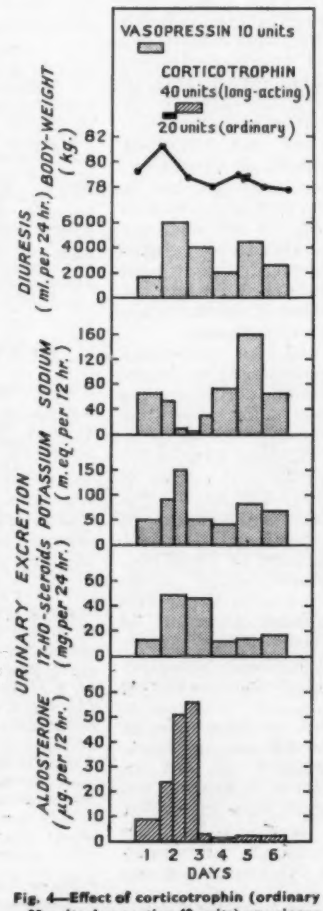

Fig. 4—Effect of corticotrophin (ordinary 20 units, long-acting 40 units) on urinary excretion of aldosterone in a healthy person, on low-sodium diet, losing weight after expansion of body-fluid with vasopressin tannate.

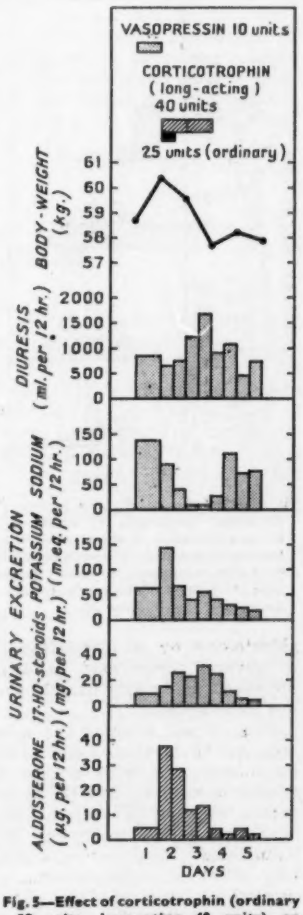

Fig. 5—Effect of corticotrophin (ordinary 25 units, long-acting 40 units) on urinary excretion of aldosterone in a healthy person, on low-sodium diet, losing weight after expansion of body-fluid with vasopressin tannate.

changes of some extracellular fluid volume: expansion decreases urinary excretion of aldosterone and contraction of the extracellular compartment increases it.

Since the metabolic consequences of the administration of corticotrophin include expansion of the extracellular fluid, a gain in weight through retention of sodium and water, and an internal shift of water from the cells to the extracellular compartment—precisely the situation which calls for a diminution in the secretion of aldosterone—it is not surprising to find the 24-hour urinary excretion of aldosterone after the administration of corticotrophin variable and irregular, depending on the relative importance of the homœostatic corticotrophin-independent regulation, and the metabolic conditions of the experiment. This interpretation explains satisfactorily not only the inconsistent and differing results of administering corticotrophin in our preliminary studies (fig. 1) but also the contradictory statements that have been published about the effect of corticotrophin on aldosterone.

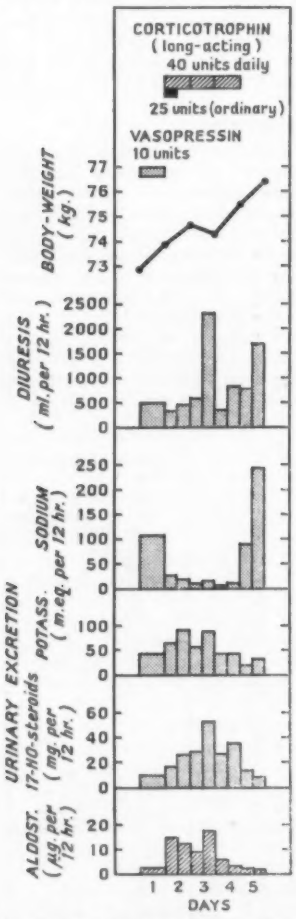

Fig. 6—Effect of corticotrophin (ordinary 25 units, long-acting 40 units) on urinary excretion of aldosterone in a healthy person after expansion of body-fluid with vasopressin tannate. Note gain of weight while on corticotrophin because of high-sodium diet.

If the increased secretion of hydrocortisone, corticosterone, and aldosterone after the injection of corticotrophin can indirectly (by means of body-fluid shifts) regulate the secretion of aldosterone, it should equally be possible, under certain conditions, to alter the urinary excretion of aldosterone by administering glucocorticoids. Indeed, in several preliminary studies, prednisone definitely decreased the urinary excretion of aldosterone, confirming our hypothesis.

Figs. 2 and 4 show the excretion of aldosterone in response to corticotrophin in three different metabolic conditions: (1) with a gain in weight; (2) with no change in weight; and (3) with a loss in weight. In the person on a normal-sodium diet (fig. 2), since the weight increases under treatment with corticotrophin, the homœostatic regulation acts in opposition to the stimulatory effect of corticotrophin, and the increase in the urinary excretion of aldosterone is small. In the person on a low-sodium diet (fig. 2), since the weight remains stationary, the homœostatic mechanism, which depends essentially on changes of volume of body-fluid, is negligible, and therefore the increase of urinary excretion of aldosterone due to corticotrophin is immediate and striking. In the third person (fig. 4), since the weight decreases under treatment with corticotrophin, the homœostatic regulation acts in conjunction with corticotrophin, and the urinary excretion of aldosterone is at its maximum.

To sum up, the urinary excretion of aldosterone after stimulation by corticotrophin depends not only on the response of the adrenal glands to corticotrophin, but also on the homœostatic regulatory mechanism which is independent of corticotrophin. This mechanism can either increase, decrease, or not affect the urinary excretion of aldosterone after administration of corticotrophin.

Summary and Conclusions

The effect of corticotrophin on the secretion of aldosterone was studied in patients selected at random and in several healthy people under strictly controlled but differing metabolic conditions.

The results prove that corticotrophin stimulates the secretion of aldosterone.

This effect of corticotrophin is often masked by a homœostatic mechanism regulating the excretion of aldosterone which is independent of corticotrophin.

The urinary excretion of aldosterone, after an injection of corticotrophin, therefore always represents the resultant of this homœostatic mechanism and of stimulation by corticotrophin.

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HEAT-STROKE DURING AND AFTER ANÆSTHESIA

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HEAT-STROKE is rare in England. The three cases reported here occurred in the summer of 1955 in the same hospital, two during anæsthesia and one postoperatively.

Case-reports

Case 1.—On July 15, 1955, the shade temperature was 72°F and the relative humidity 74%.* A man, aged 22, premedicated with scopolamine gr. $^1/_{150}$ and 'Omnopon' gr. $^1/_2$, arrived, dressed in the regulation smock and bed-socks, in the anæsthetic room for the surgical relief of Crohn's disease. He was anæsthetised with thiopentone 0·5 g., nitrous oxide and diethyl ether, and curarised with *d*-tubocurarine 15 mg. In the theatre he was towelled up normally without regard to the weather. Within 10 minutes his head and neck were sweating profusely; his skin was hot and his oral temperature was 102°F. His socks were removed, and wet towels were placed on his legs, but it proved impossible to direct a flow of air from a fan on to these towels because of the operative posture. As an alternative, ice in waterproof

* Shade temperature and relative humidity are from Air Ministry records. The theatres of a teaching hospital inevitably contain more than the over-all average of personnel. In such circumstances, without adequate air-conditioning, the temperature and relative humidity must rise.

bags was packed between his legs. By this time he had been anæsthetised for 35 minutes and his oral temperature was 104·5°F. Within another 20 minutes his oral temperature had fallen to 99°F and sweating had ceased. The operation, which lasted two hours, was completed without further incident. On return to bed the patient was stripped, his only covering being a loin-cloth, and appropriate postoperative instructions were given.

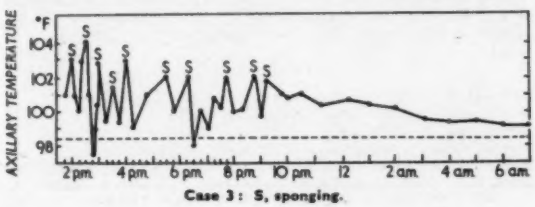
Postoperative Progress.—In the early hours of the first postoperative day the night nurses, mistaking his cold extremities and raised pulse-rate for surgical shock, raised the foot of the bed on blocks and applied artificial heat. The patient's temperature rose rapidly, reaching 106°F (rectal) at 4 A.M. The house-surgeon having been called, appropriate treatment was instituted, and the patient's temperature fell to 100°F (oral) within the next 7 hours. He made an uninterrupted recovery.

Comment.—The ward sister observed that, in the preoperative period, this man, alone of the 23 men in this ward, complained bitterly of the heat and required a fan. This fact, together with his response to artificial heat postoperatively, indicates that he was susceptible to heat and that heat-stroke had been aborted in the operating-theatre.

Case 2.—On July 21, 1955, when the theatre temperature was 82°F and the relative humidity 73%, a child, aged 3½ years and weighing 27 lb., was operated on for coarctation of the aorta. Premedication consisted of atropine gr. 1/100 and pentobarbitone gr. 1. Anæsthesia was maintained with intermittent injections of pethidine and *d*-tubocurarine chloride into the drip and nitrous oxide and oxygen through a cuffed endotracheal tube with controlled respiration and to-and-fro absorption through a Waters's canister. The regulation bed-socks had been removed in the anæsthetic room, but when the patient had been placed in the routine thoracotomy position on the operating-table, she was partially covered by mackintosh towels. An hour after the induction of anæsthesia she began to sweat profusely, and her forehead became hot to touch. Ice in waterproof bags was at once applied around her head and arms; but, owing to her position on the operating-table, it was impossible to apply them elsewhere on the body. 4 hours from the onset of anæsthesia the thoracotomy wound was closed, the coarctation having proved to be unresectable for technical reasons. During the operation the left carotid artery was occluded for 4 min. 45 sec. at one time, and the child very nearly died on the table. At the conclusion of the operation the patient's rectal temperature was 106°F, and she died soon after her return to the ward.

Comment.—There was undoubtedly a severe anoxic element in this case, but the rise in body-temperature was appreciable before any cerebral anoxia, and probably the uncontrolled hyperpyrexia contributed to her death.

Case 3.—A man, who had undergone retropubic prostatectomy without incident, had an excellent first postoperative day. On the second postoperative day, July 26, 1955, when the shade temperature was 72°F and the relative humidity 65%, he became disoriented and restless, with a dry hot skin. His temperature, taken in the axilla because of his restlessness, was 104°F. Soon, twitching of his muscles was observed, and his blood-urea level began to rise. Dr. W. N. Mann saw him at midday and diagnosed heat-stroke, and sponging with ice was begun. The accompanying figure shows that this controlled the body-temperature, but muscle twitching continued, and at 6 P.M. the patient began to hiccup. By this time his blood-urea level had risen from 43 to 85 mg. per 100 ml. The figure also shows that at 10 P.M. (8 hours after sponging had been started) the heat centre regained control: hiccup, twitching, and restlessness ceased, and the body-temperature fell by lysis. Within the next 2 days the blood-urea level had fallen to normal. The patient remained mentally confused, but 3 days from the onset of heat-stroke he could concentrate sufficiently to read a novel with pleasure, and convalescence was uneventful.



Case 3: S, sponging.

Discussion

In hot humid climates the possibility of heat-stroke during anæsthesia and in the postoperative period is well recognised. Disturbance of heat-regulation sufficient to cause symptoms in an anæsthetised patient is very uncommon in the temperate climate of England, but these three cases show that this can happen if sufficient care is not taken to ensure that heat-loss by radiation, conduction, convection, and evaporation of water from the skin surface is free and unembarrassed.

It is not yet sufficiently appreciated that, during hot weather in this country, the relative humidity of some operating-theatres, with poor ventilation and as many as twelve persons in the room, can rise to a high value. When a hygrometer was placed between the thighs of an anæsthetised toxic child, aged 8, whose legs were covered with a sterile waterproof sheet and towelling, the relative humidity was found to be 100%.

Waterproof sheets and towelling curtail the evaporation of sweat, and the most important part of the body's mechanism of heat-regulation breaks down. The use of mackintosh towelling should be avoided completely in hot weather, and every effort should be made to ensure that adequate ventilation and circulation of air should be present in the operating-theatre to keep the relative humidity down to a minimum. Lastly, all clothing such as bed-socks and theatre gowns should be removed from the patient before placing him in position on the operating-table.

We thank Dr. W. N. Mann for permission to use the figure.

COMA IN DIABETES WITH RENAL FAILURE

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DROWSINESS in a diabetic with acidosis must always raise the question of diabetic coma. The absence of ketones from the urine is not conclusive evidence to the contrary, for well-authenticated cases of diabetic coma without ketonuria have been published (McCance and Lawrence 1933, Henneman 1952). But such a diagnosis cannot safely be made unless ketones are demonstrated in the blood.

The following case is reported to show how renal failure in a diabetic may lead to a state closely simulating diabetic coma.

Case-report

The patient was a single woman aged 58, of average build, who had diabetes mellitus for 17 years and had attended a diabetic clinic since 1948. Her diabetes was not difficult to manage, and she never required more than 32 units of insulin daily. Her urine had never been reported to contain more than a trace of ketones, but between 1951 and 1953 she developed retinopathy and cataracts. From 1953 protein, pus cells, and coliform bacilli were found repeatedly in her urine, and she was regarded as having chronic pyelonephritis. She had no œdema, and her blood-pressure never exceeded 140/80 mm. Hg. In January, 1955, her blood-urea was 84 mg. per 100 ml. and urea-clearance 33% of normal average. Probably as a result of her uræmia she was anæmic, with a hæmoglobin of 70% (10·4 g. per 100 ml.).

First Admission

On Feb. 22, 1955, she was admitted to the Royal Victoria Infirmary, apparently in diabetic coma. 4 days previously she had developed an acute exacerbation of her chronic urinary infection and had become drowsy, dehydrated, and

hyperpnœic. Her blood-pressure had fallen to 80/55. Her urine contained more than 2% of sugar. Rothera's and Gerhardt's tests for urinary ketones were both negative. Her blood-sugar was 760 mg. per 100 ml. and blood-urea 138 mg. per 100 ml. Her alkali reserve was not estimated on admission, but 18 hours later she was mildly acidotic, with alkali reserve 20 m.eq. per litre.

In spite of the absence of ketonuria the patient was treated as a case of diabetic coma, 600 units of insulin being given in the first 24 hours with a satisfactory clinical response. Her urinary infection was treated, and she remained reasonably well for the next 8 months.

Readmission

On Nov. 9, 1955, she was readmitted in a similar coma. For 5 days she had been feverish. She did not increase her usual small dose of insulin and when she reached the hospital she was too drowsy to give a history. She had no focal neurological signs. Her urine again contained no acetone and only 1% of sugar. Casts were present but no pus cells. Her blood-sugar shortly after admission was 890 mg. per 100 ml. and blood-urea was 238 mg. She was acidotic and had hyperpnœa; her serum-electrolyte levels were sodium 123, potassium 5, calcium 4, chloride 93, alkali reserve 6, and phosphate 1 m.eq. per litre. Her plasma-proteins were 6·6 g. per 100 ml. (about 16 m.eq. per litre). There was thus an anion deficit of about 16 m.eq. presumably due to unidentified organic acids. These were not the keto-acids expected in diabetic coma, and tests for acetone and aceto-acetic acid in the blood (Dumm and Shipley 1946) were repeatedly negative.

In spite of the absence of ketonæmia the patient was treated once again as a case of diabetic coma, 400 units of insulin being given, half intravenously and half intramuscularly together with intravenous saline solution and lactate over the next 4 hours. This lowered the blood-sugar to 115 mg. per 100 ml. There was no oliguria, and 74 oz. of urine was obtained by catheter during the first 24 hours. By the following day her condition was somewhat improved, and after 2 weeks her blood-urea had fallen to 105 mg. per 100 ml.

For the next 2 months she remained acidotic, with an alkali reserve which never exceeded 15 m.eq. per litre, and her renal function deteriorated, her blood-urea rising to 280 mg. per 100 ml. Nevertheless she appeared to improve clinically and was well enough to travel the length of England by train to stay with relatives.

Final Illness

After a few weeks, however, she relapsed, and on Feb. 9, 1956, she was admitted to Ashford Hospital, Middlesex, in coma. As before, she was acidotic (alkali reserve 10 m.eq. per litre) and hyperglycæmic (blood-sugar 684 mg. per 100 ml.), but her blood-urea of 125 mg. per 100 ml. was considerably lower than it had been a few weeks earlier. Her urine contained protein and sugar but no ketones. Many pus cells were seen on microscopy, and coliforms and staphylococci were obtained on culture. Her serum-electrolyte levels were sodium 138, potassium 4·5, and chloride 100 m.eq. per litre. Her blood was not tested for ketones. She was treated with intravenous saline solution, lactate, and glucose, and insulin 85 units was given in the first 24 hours. Thereafter the blood-sugar was kept within normal limits, but the blood-urea rose slowly, reaching 264 mg. per 100 ml. 4 days later, when the patient died.

Necropsy Findings (Dr. W. F. Hamilton)

There was a gross pyonephrosis on the left side with much destruction of renal tissue. There was papillary necrosis in the upper pole of the right kidney, whose capsule was thickened and adherent. The pancreas was small but appeared normal to the naked eye. The liver showed mild "nutmeg" changes. An old anteroseptal myocardial infarct, pulmonary œdema, and a small abscess in the right lung were also found. The pituitary gland was normal. Microscopically both kidneys showed extensive destruction with evidence of acute as well as chronic pyelonephritis. In addition the nodular lesions of intercapillary glomerulosclerosis (Kimmelstiel and Wilson 1936) were fairly frequent, and hyaline changes were present in the renal arterioles. The pancreatic islets appeared normal in number and appearance. The liver was congested, and there was a small area of recent necrosis in the pituitary which was otherwise normal.

Discussion

The outstanding feature of this case is the recurrent coma which in three attacks always conformed to the same pattern. In each there was acidosis with hyperglycæmia and glycosuria but no ketonuria. In the second attack it was established that there were no ketones in the blood, and it seems likely that this absence of ketonæmia was also a feature of the other two clinically similar episodes.

The question, then, arises whether these attacks were due to the diabetes, or to the severe kidney diseases, or to a combination of the two.

Although the exact cause of diabetic coma is unknown, the presence of ketones in the blood is regarded as a cardinal feature without which the diagnosis cannot be made (Root 1952). In diabetic ketosis renal disease may prevent the appearance of ketones in the urine, but they are always present in the blood, and a search of the literature has not revealed a single convincing case of diabetic coma in which ketonæmia was absent.

Since it is impossible to regard our patient's attacks of unconsciousness as diabetic coma in the ordinary sense, it is necessary to consider whether they were entirely due to her renal disease and unrelated to her diabetes. This view would be supported by the severity of the renal lesion revealed at necropsy and by the deterioration in renal function with each attack. On the other hand, clinical recovery twice followed treatment appropriate to severe diabetes rather than to renal failure, and this is against a purely renal explanation.

It therefore seems to us that the attacks of coma cannot be attributed solely to the diabetes or to the renal disease but must lie in a combination of the two, Although the mechanism remains obscure, it is well known that renal disease and diabetes can react on each other. Allen (1923) showed that experimental renal impairment would abolish or greatly reduce the ketosis of phloridzin-induced diabetes in dogs and cats, and since the work of McCance and Lawrence (1933) it has been recognised that diabetes may seriously interfere with renal function. Finally, the anatomical changes caused in the kidney by long-standing diabetes are now widely acknowledged to be among the most important complications of diabetes.

The diagnostic difficulty presented by this patient has not had much attention in the past, and we feel that the publication of a single case-report is justified, if only to emphasise the problem. Similar cases will only be recognised if the blood is tested for ketones in every diabetic patient who is found to be acidotic but without ketones in the urine. This test may readily be applied quantitatively in the laboratory by the method of Dumm and Shipley (1946), or at the bedside by the simple expedient of adding one drop of centrifuged plasma or serum to an 'Acetest' tablet.

Summary

A case is described of recurrent coma in a patient with renal failure due to diabetic nephropathy and chronic pyelonephritis. The main features were severe acidosis and hyperglycæmia without ketonæmia and ketonuria.

The possible explanations for these findings are discussed with special reference to the importance of testing the blood for ketones in any case of apparent diabetic coma without ketonuria.

Our thanks are due to Dr. C. N. Armstrong for permission to publish this case, and to Dr. K. A. Manley and Dr. W. F. Hamilton for details of the last illness and the necropsy.

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SOME APPLICATIONS OF A NEW ELECTRONIC STETHOSCOPE

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AN amplifying stethoscope, if it is to be of more value than the conventional pattern, must be capable of enabling one to hear sounds otherwise inaudible. For the partially deaf doctor any kind of amplifier is better than none, and in the past most electronic stethoscopes have only been of use on this account. It has not been sufficiently appreciated that an amplifying stethoscope must also be free from background noise developing in the apparatus itself, must give faithful reproduction over a very wide register, and must be compact and portable.

A new electronic stethoscope (Taylor and Fothergill 1956) has amplification characteristics and flexibility of control much superior to those of previous instruments, enabling it to be used for many tasks beyond the capability of the ordinary stethoscope. The apparatus consists of a high-gain miniature electronic amplifier designed to create an electrical wave-form duplicating the acoustical wave-form (i.e., without distortion) at a gain of +90 decibels and a power dissipation of 11 mW. The circuit is embedded in a polyester resin to prevent accidental damage. The amplifier is small, light, and compact (fig. 1).

The main points of interest for the medical user are as follows:

(1) There are two input sockets for the comparison of sounds heard by two differently located microphones.

(2) The microphone provided is of a new type which only picks up sound from (or resonating in) the object with which it is in contact. This is essential if full amplification is to be used, since the amount of external noise picked up by ordinary microphones can be very considerable.

(3) Unwanted sounds picked up by the microphone can be filtered out by one of two controls which do not distort, but merely restrict, sound at the upper or lower end of the frequency scale.

(4) The volume can be smoothly controlled over a wide range. The quality at full volume does not differ from that at lower levels of amplification.

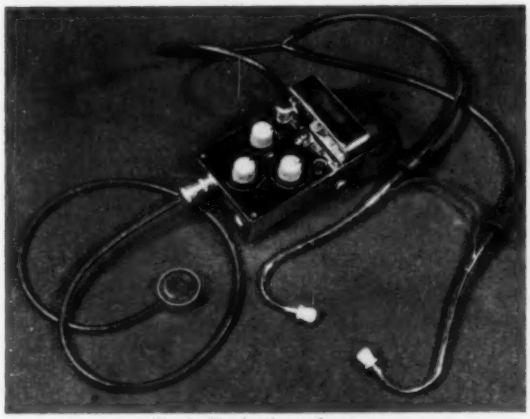

Fig. 1—Electronic stethoscope.

(5) There are two output sockets, enabling two persons to hear simultaneously, an arrangement which is ideal for student and teacher. Alternatively one output can be connected to a loudspeaker, meter, or recorder, and the other used to monitor the record.

We give below some of the uses to which this instrument has been put.

Auscultation of Heart and Chest

This stethoscope has two features not previously found in electronic stethoscopes: (1) there is no "mechanical" or "electronic" quality about the sounds heard; and (2) there is complete freedom from excessive high-pitch harshness. The sounds closely resemble those heard with a conventional stethoscope, except that they are louder and the frequency range covered by this instrument is wider.

All the low notes, such as those of normal heart sounds, are included, as are the higher-pitch sounds such as cardiac murmurs, breath sounds, and crepitations. Since breath sounds heard through a conventional stethoscope are fainter than the corresponding heart sounds, auscultation amid noise may be difficult. The considerable amplification afforded by this instrument, together with the rejection of outside sounds by the contact microphone, enables the examination to proceed amid, for instance, the noise in a children's ward. In addition, either or both ends of the frequency spectrum can be cut at will by controls which work smoothly and have an adequate amount of turn to give critical control. So flexible is this type of selection that, if it is suspected that a murmur is present but hidden by the heart sounds, the latter can be cut out and the attention directed exclusively to the higher frequencies. This feature has already proved its value in clinical practice, for heart murmurs can be notoriously difficult to hear; and, although the human ear discriminates well in the upper frequencies, if lower tones are equally magnified they readily swamp the higher ones. The soft murmurs, which present the greatest problem in cardiology, can usually be well differentiated by the frequency selectors.

In treating a patient in a cabinet respirator this ability to select a particular group of sounds for study is often valuable. The following example shows how effective the isolation can be:

A poliomyelitic patient, able to breathe only a little without mechanical help, was in a cabinet respirator. With an ordinary stethoscope it was impossible to hear the breath sounds, because they were blanketed by the exceedingly loud booming noise produced by the respirator pump. The microphone was placed on the chest, being inserted through the armport along with the examiner's arm. With the whole frequency range included, the pump noise drowned the other sounds in exactly the same way as it did in the case of an ordinary stethoscope. The low-frequency cut-out control knob was then slowly turned until the pump sounds disappeared. The breath sounds being higher in pitch remained and sounded normal. A second armport was then opened, allowing the cabinet pressure to fall nearly to zero. It was possible to tell, by observing the slight movements of the pressure-gauge needle, that the patient's respiratory cycle was slowly becoming out of time with that of the respirator. It was thus clear that the sounds were not due to air rushing through the valves or the armport but true breath sounds. This was confirmed by switching off the pump and allowing the patient to continue to breathe on his own.

This is the first time that it has been possible to hear the breath sounds of a patient in a cabinet respirator while it is running. Previously auscultation of the paralysed patient's chest has presented great difficulties because air entry and added sounds stop as soon as the pump is switched off to enable the physician to hear. Alternative methods of inflation of the lungs, such as the use of a face-mask, may be misleading because they disturb the patient and make it difficult to ensure a constant depth of respiration.

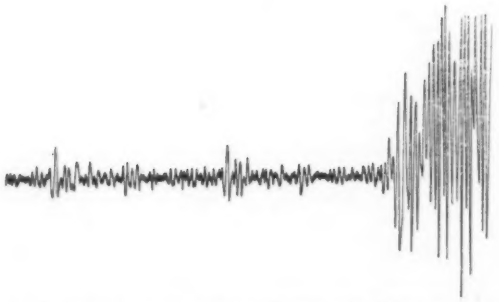

Fig. 2—First and second heart sounds of volunteer in cabinet respirator.

Suitable manipulation of the instrument's frequency controls makes it also possible to hear the heart sounds. Fig. 2 is a record of the first and second heart sounds of a volunteer in a cabinet respirator. For this purpose the instrument was coupled directly to a Cambridge electrocardiograph switched to the lowest amplification. Fig. 2 also shows the increase in noise heard when the filter controls were returned to the wide-frequency positions.

Auscultation of Fœtal Heart

The pitch of the fœtal heart sounds is low and approaches the limit of acceptance of conventional stethoscopes. Not only can the electronic stethoscope pick up these frequencies with ease but also it can be adjusted to reject much of the surrounding ward noise. Search for the fœtal heart sounds is simplified because of the clarity and loudness of the amplified sounds. It has also proved possible, by attaching a suitable meter, to count the fœtal heart-rate from the movements of the pointer.

Auscultation of Joints

Normal joint sounds are low in pitch and have a smooth sliding quality. It is often difficult to keep the stethoscope head in position, and auscultation with a conventional stethoscope introduces many artefacts which resemble the sounds of diseased joints, though somewhat higher in pitch. The electronic stethoscope can filter these out, and thus it can be shown that though the arthritic joint, moved passively under conditions of no load, may slide quite easily and silently, under load it may give out loud rasping noises. In some cases it can be clearly heard that the joint surfaces corresponding to the point of heaviest loading are much rougher than in the extreme positions. Further work along these lines would doubtless increase the value of this type of investigation.

Discussion

Most people require a great deal of practice before they become proficient with the ordinary stethoscope, and practice is required with this one. But statements made by electronic engineers that accurate reproduction of the sounds emitted by the body would necessitate the relearning of auditory signs have not been borne out. The amplified sounds very closely resemble those heard through the ordinary stethoscope, in spite of being louder. Heart sounds and murmurs, breath sounds, and normal joint sounds are easily identified. The chief difficulty has been in recognising added sounds, simply because they are so much louder and because often many more are heard. But, since the full frequency range emitted is amplified, the sound now heard with harmonics previously below the threshold of hearing becomes much more "real." A comparison could be made in this respect with the difference between ordinary and high-fidelity reproduction of music.

The limitations of an amplifying stethoscope are well known. It is, for instance, impossible to make a person hear sounds which his cochlea cannot detect, as happens progressively with the higher frequencies in most people after middle age. In addition, amplification of physiological sounds is accompanied by amplification of noise from the surrounding skin, muscles, and tissue planes. This undesirable background is reduced in the first place by using a contact microphone so effective that, for example, it will not pick up speech when held a short distance from the mouth. Further, the selectivity provided by this apparatus over its wide range of frequencies allows any particular group of sounds to be amplified to the exclusion of all others. We have tried to show how heart, breath, and joint sounds can be studied in much greater detail by this means.

This is a preliminary report describing some of the very interesting applications we have found for this new, small, and powerful electronic stethoscope. There will clearly be many others.

Our thanks are due to members of the consulting staffs of the Royal National Orthopædic Hospital and of King's College Hospital, and to Dr. R. G. Newill for permission to examine their patients. We also wish to thank the department of medical photography, Institute of Orthopædics, for the photographs.

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Preliminary Communication

RECOVERY OF A VIRUS FROM CASES OF AN EPIDEMIC EXANTHEM ASSOCIATED WITH MENINGITIS

AN epidemic disease with some unusual features has been observed in England in the past five months. Attention was drawn to this disease in September, 1956, in Sheffield, when patients with a rash and aseptic meningitis were admitted to the Lodge Moor Isolation Hospital, from an area about 15 miles south of Sheffield (Bolsover and district). Study of the families of the patients admitted to hospital showed that the epidemic was attacking many children under 10 and more than one person in affected families. The commonest clinical features at the onset of the disease were fever, severe headache, and nausea and vomiting. The course of the illness was often diphasic and a child might be well for from one to five days before fever and illness returned. Many children showed a macular rash lasting a few hours or a few days. This usually affected the cheeks and face and was at times generalised. It might be followed by localised areas of vesiculation and scaling which faded more slowly.

Some patients showed mouth lesions, usually of the buccal mucous membrane and most readily recognised as white or greyish dots opposite the molar teeth. Slight generalised lymphadenopathy was seen in many cases. Neck stiffness was present in about a quarter of the patients so far studied. In 6 patients admitted to hospital with signs of meningitis, the cerebrospinal fluid (C.S.F.) showed a raised cell-count in every case and a raised protein in 4 instances. The cells were mainly lymphocytes and the counts ranged from 50 to 1584 per c.mm.

VIRUS STUDIES

Attempts were made to recover virus by inoculating roller-tube tissue-cultures prepared from trypsinised suspensions of human kidney cells. Nose and throat swabs in milk saline and fæces were collected for virus isolation. So far cytopathogenic changes like those due to polioviruses, but less severe, have been seen in cultures inoculated with material. These changes are transmissible and apparently due to a virus. 16 strains of virus have been typed by neutralisation tests and found to be the same as that of the first patient studied (Haynes). 9 of 10

strains have been found to cause paralysis of suckling mice. Histological examination of an affected mouse showed pathological changes in striated muscle. All of 8 strains tested caused degeneration in human embryo fibroblasts. The strain Haynes was found to be ether-stable and filtrable and could be sedimented at 120,000 *g* for two hours but not at 30,000 *g* for thirty minutes. The virus was not neutralised by antisera against poliovirus, adenovirus types 1–11, Coxsackie virus types A1–A10 and B1–B4.

Neutralising antibody was found in the serum of all 8 patients tested, and a fourfold or greater rise was found in 5 of 8 paired sera.

Control groups were also studied. Virus was recovered from 1 of 7 unaffected members of the families of patients with the disease, but from none of 25 cases of acute infections of the respiratory tract and nervous system occurring between 1954 and 1956. Neutralising antibody was found in the serum of 1 of 6 control cases of other diseases admitted to hospital during the same period and in 18 of 79 sera of subjects aged from birth to 24 years and bled over the past four years.

Virus was recovered from throat swabs up to six days from the onset of the illness and from fæces up to ten days from the onset.

COMMENT

We understand that cases resembling those reported here have occurred in the Midlands and Northern and Eastern England.[1 2] We have recovered strains of this virus from patients with aseptic meningitis in Darlington and Middlesbrough. The disease resembles that described by Neva et al.,[3] except for the presence of aseptic meningitis. They describe a different host range in vitro for the virus which they recovered.[4] Neva's agent was nonpathogenic in suckling mice. Full reports of the clinical and laboratory studies will be published when the investigation is completed, but we feel that we have evidence suggesting that the epidemic we observed was caused by a virus related to Coxsackie group A. In order to establish that the virus causes the disease it will be desirable to recover it regularly from similar cases occurring in other geographical areas and to extend the control series. It is hoped that this preliminary communication will encourage other workers to obtain such data.

We wish to thank Dr. R. R. Lane and Dr. J. M. Kennedy for allowing us to study patients under their care and Mr. R. B. Zachary for supplying human kidneys.

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2. A Lancashire outbreak of lymphocytic meningo-encephalitis with myalgia and rash is described by Dr. Lyle on p. 1042.—ED. L.
3. Neva, F. A., Feemster, R. F., Gorbach, I. J. *J. Amer. med. Ass.* 1954, **155**, 544.
4. Neva, F. A., Enders, J. F. *J. Immunol.* 1954, **72**, 307.

New Inventions

A RECORDING SPHYGMOMANOMETER

RECENT advances in many fields—e.g., the reduction of hypertension by drugs and the induction of hypotension to ensure a bloodless field in surgery—call for some method for the continuous recording of blood-pressure. Since underventilation and hypertension are related, a rise in blood-pressure is a useful guide in such states as bulbar poliomyelitis or where mechanical artificial respiration must be given. There is an increasing need for a direct-writing blood-pressure recorder which is completely free from zero-drift, records systolic and diastolic pressures, and is light and small enough to go on a bedside table or on an anæsthetist's trolley.

Many forms of recording apparatus have been tried in the past. Most have apparently been very large [1–7]; some have recorded only systolic pressure,[4 7] have had no provision for release of the cuff,[1 2 4 6] or have required the reading of two traces,[3] or they have involved photographic recording.[5] More modern techniques involve the use of a condenser or strain-gauge manometer, neither of which is inherently free from zero-drift and which may require recalibrating at intervals. They may need two cuffs or depend upon the patency of an indwelling arterial needle which first must be inserted.

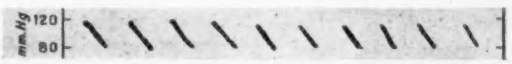

Fig. 2.

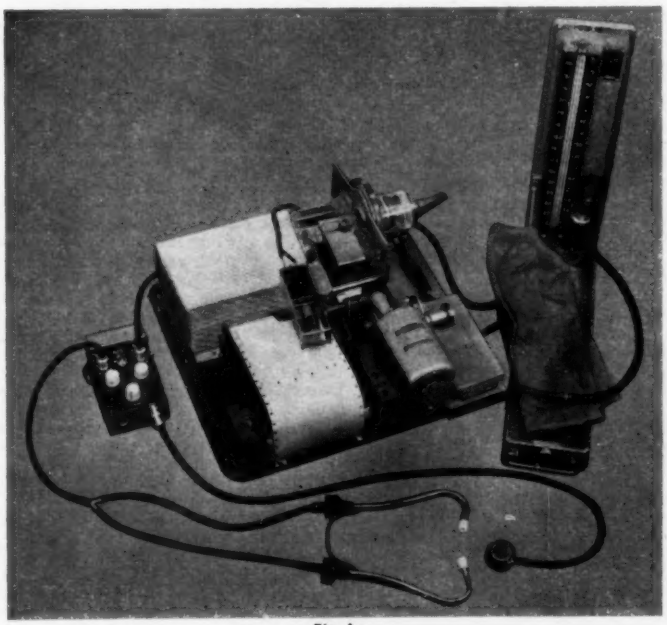

Fig. 1.

The recent invention of a high-gain electronic stethoscope (described in our accompanying paper) has made recording sphygmomanometry practicable. We have invented an attachment for the electronic stethoscope which does this (fig. 1).

The first essential, a drift-free recording method, is arranged by employing a bellows manometer connected to the sphygmomanometer-cuff directly. Thus the position of the pen-point over the paper is entirely mechanical, and reproducible from day to day and hour to hour.

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7. Kernodle, C. E. jun., Hill, H. C., Grimson, K. S. *Proc. Soc. exp. Biol., N.Y.* 1944, **55**, 64.

The pen is made to write, however, only when sounds are detected by the microphone placed distal to the cuff. This can conveniently be done by amplifying the sound and using a solenoid-operated pen, a hot wire stylus and waxed paper, or high voltage and spark-sensitive paper. At suitable intervals the cuff is pumped up to a predetermined figure and slowly allowed to deflate. As fig. 2 shows, the pulse-beats picked up as the cuff pressure drops from systolic to diastolic are recorded on the paper.

This method cannot be made to work unless the apparatus is inherently insensitive to external noise. This has been achieved: the electronic trigger-circuit is sensitive only to impulses of less than 10 c. per sec., which have virtually no sound quality at all. Since the microphone on the arm is usually not subject to vibration, only impulses of pulse frequency remain to be accepted. Earphones attached to the second output-socket on the stethoscope allow one to confirm that this circuit will reject noise which is louder than the signal.

The size of the apparatus shown is 14 × 13 × 10 in. It can easily be fitted on or under the anæsthetic trolley. A lighter and more compact model in which inflation of the cuff is automatic is in process of development. We hope to describe this soon.

We are greatly indebted to Miss P. G. Wilson and Mr. W. Godfrey for their help in the development of this apparatus. We also have to thank the department of medical photography of the Institute of Orthopædics for the photographs.

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Reviews of Books

Alcoholism

LINCOLN WILLIAMS, M.R.C.S., medical director, The Hall, Harrow Weald. Edinburgh: E. & S. Livingstone. 1956. Pp. 62. 8*s*. 6*d*.

Alcoholism

Edited by GEORGE N. THOMPSON, A.B., M.D., F.A.C.P., associate clinical professor of neurology and psychiatry, University of Southern California, Los Angeles. Oxford: Blackwell Scientific Publications. 1956. Pp. 548. 72*s*.

ALTHOUGH written with entirely different aims, these two books create identical impressions. It appears that alcoholism, whether considered sociologically as a phenomenon of group behaviour, medically as a metabolic disturbance, or psychiatrically as evidence of mental disorder, remains a major problem about which very little is known despite a great deal of work.

Dr. Williams in his brief study is concerned to popularise the thesis that alcoholism is not an example of "moral depravity" but rather a disease which ought to be treated.

He divides alcoholics into "the 'good,' the 'sad,' the 'mad' and the 'bad.'" Among "personality factors" he has found "resentment to be the most constant and most difficult to eradicate." The aim of treatment should be nothing less than "total and permanent abstinence." To accomplish this difficult task, the physician must "break down the individual's defences utterly, either by psychological or physical methods, and, in his altered state, implant new concepts and patterns." High on the list of methods favoured by Dr. Williams come "conditioned-reflex aversion treatment" and the work of Alcoholics Anonymous, which he regards as a form of group therapy.

The much more comprehensive volume edited by Dr. Thompson is in eight parts by different contributors.

It originally set out to be "in every sense a monograph—a complete coverage of the subject," but "perforce had to be a condensation otherwise it would have required three volumes." Having no unified point of vantage from which to survey the subject, the reader is soon lost in a wealth of detail, contradictory evidence, and often speculative opinions. Closer coöperation between the eight contributors as well as a summary and conclusions at the end of every section would have helped to mitigate a perhaps unavoidable sense of confusion in a book which attempts so much in a comparatively small space. For instance, Dr. J. Hirsh, in the chapter on Public Health and Social Aspects of Alcoholism, discusses the cause of alcoholism in terms of "intra-psychic conflict," while Dr. Thompson, writing on the Psychiatry of Alcoholism, although "not willing to dismiss psychogenesis as a cause," paradoxically suggests that its origin may be found in "neurochemistry . . . or structural brain disease." Other chapters deal competently with pharmacological, pathological, medical, neurological, and electro-encephalographic aspects; that by Prof. H. E. Himwich on Alcohol and Brain Physiology deserves special mention.

An Atlas of Diseases of the Eye

E. S. PERKINS, M.B., F.R.C.S., reader in ophthalmology, Institute of Ophthalmology, University of London, PETER HANSELL, M.R.C.S., F.R.P.S., director, departments of illustration and photography, Westminster Medical School and Institute of Ophthalmology, University of London. London: J. & A. Churchill. 1956. Pp. 91. 42*s*.

THIS book contains 176 coloured illustrations which show many minutiæ almost as clearly as in an actual patient. All the common external and fundus conditions are shown, as well as many rarer changes; and the book will be valuable for all students of ophthalmology, and also for doctors whose work gives them little direct contact with ophthalmology.

The assessment of retinal vessels depends on understanding the changes which result from normal ageing; but unfortunately this book provides no illustrations of the straightening and narrowing of the retinal arteries with advancing years in the absence of hypertension. Textbooks of ophthalmology are singularly muddled in their presentation of the retinal-artery changes in arteriosclerosis and hypertension, and this book represents no improvement. It neglects to indicate that the effects of hypertension on the retinal arterioles (as on all arteries) varies considerably with the age of the patient as well as with the height of the blood-pressure and its speed of rising. A minor criticism is that the passage on gonioscopy makes no mention of the new nomenclature for glaucoma adopted by the Symposium on Glaucoma in September, 1954.

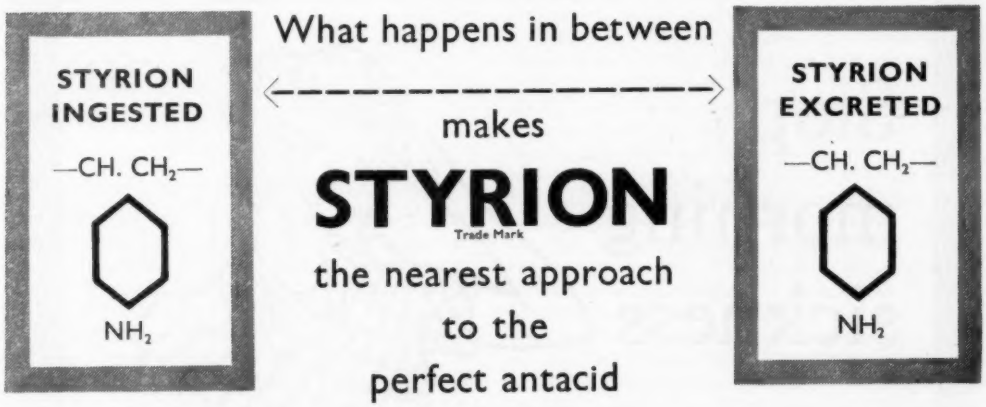
Despite these criticisms the illustrations in this book are of outstanding value.

Hormones and the Ageing Process

Proceedings of a Conference Held in New York, 1955. Editors: EARL T. ENGLE, New York; GREGORY PINCUS, Shrewsbury, Mass. New York: Academic Press. London: Academic Books. 1956. Pp. 232. 68*s*.

THIS symposium contains, in 18 papers, an enormous amount of fact and opinion. Dr. Pincus himself has already done very important work on the determination, by chromatography, of the various steroid components in the urine and their changes with age. Studies of this type are already making more rational replacement therapy possible in ageing people, and some work of this kind is reported here, together with investigations of the anabolic actions of steroids, their effect in osteoporosis, and their use in experimental cancer therapy.

One of the most interesting findings is that testicular steroids appear to exert a depressive effect on cerebral metabolism, which is higher in pre-pubertal individuals and in those with pituitary or testicular defects, and is restored to adult levels by testosterone. In view of the part played by the central nervous system in the timing of puberty, this might prove a fundamental line of investigation, and comparative work should be of interest. The main immediate significance of the observation at present is in connection with the introduction of steroid anæsthetics. The book is well indexed and references are plentiful. The verbatim discussions are a little diffuse, but there is no doubt that this is a very useful series of review articles.



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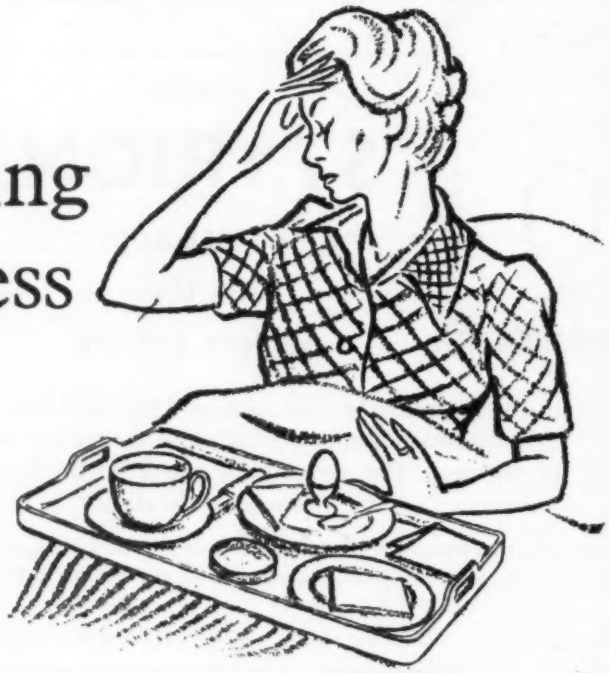

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LONDON: SATURDAY, NOV. 17, 1956

Sympathectomy for Hypertension

SYMPATHECTOMY for hypertension shares with laminectomy for prolapsed disc and vagotomy for peptic ulcer the questionable distinction of having been among the most fashionable operations of recent years. Yet it has lately been said that "few operations are more dead today."[1] Violent swings of opinion are often unreliable; and in this case the body may still prove to be alive. WELLS[2] recalls that sympathectomy probably has little or no effect on the ultimate cause of essential hypertension, but he adds that by producing a "splanchnic and lower-limb vascular pool" it lowers peripheral resistance and thus interferes with its "mechanism of production." This is an important point, because unfulfilled claims of cure have done much to discredit the operation. But the fact that sympathectomy does not cure hypertension does not mean that it cannot help many hypertensive patients.

WELLS's series dates mainly from before the days of ganglion-blocking drugs; but it nevertheless allows a fair appraisal of what sympathectomy has to offer, and it also points to some of its dangers and imperfections. Of 119 patients with severe benign or malignant hypertension, who underwent approximately 238 operations, 4 died after the operation. Though all the deaths were in "bad-risk" cases, WELLS believes that, with the experience since gained, most, if not all, could have been avoided. Operative mortality could certainly be reduced by excluding some of the worst risks; "but had we done this," he adds, "we should have missed some of our best results." In the survivors, symptomatic response was almost uniformly excellent. WELLS is confident that patients can be told that "sympathectomy will banish their headaches"; during the five-year follow-up period, severe headache recurred in only about 5% and moderate headache in another 5%. Almost equally satisfactory was the reversal of eye-ground changes; and WELLS has no doubt that vision was saved in some patients. After five years, only about 10% were conscious of some impairment of vision. In striking contrast to the relief from symptoms, the fall in blood-pressure was rarely maintained. On this point WELLS's findings fully agree with those of most workers[3–8]: and the majority also agree that little or nothing can be gained by extending Smithwick's thoracolumbar resection to the whole thoracic or even the entire sympathetic chain. It is for this reason that the operation has received its sternest criticism. As early as 1950 PLATT and STANBURY[9] argued that headaches were too inconstant a feature of hypertension to be of any prognostic significance and they insisted that, in the absence of a sustained fall in blood-pressure, they should not be used to assess the value of sympathectomy. In 1953 STEWART[10] concluded from his inquiry that headaches were rare until patients were told that their blood-pressure was high. Headaches, dizziness, and black-outs are highly subjective phenomena; and there can be no doubt that a mild psychoneurosis, whether initiated or merely aggravated by fear of "blood-pressure," is common amongst hypertensives.[11] But this need not discredit the achievements of surgery. No surgeon would advocate sympathectomy purely as a form of psychotherapy; but he need not apologise if the drama and the more positive atmosphere of the surgical ward make their contributions to success.

As PICKERING[12] has put it, "the twin objectives are the prolongation of life and the encouragement of the sense of well-being or enjoyment that the patient derives from his life while he has it"; and in no other condition are these two objectives more in conflict than in hypertension, "where all apparently successful forms of therapy have a high nuisance value." Of hexamethonium, for example, PALMER[13] says that it may be used if the patient can accept blurred vision, dryness of the mouth, constipation (even paralytic ileus), urinary retention, abnormal susceptibility to spirits, embarrassing faintness or syncope, and impotence; and if his doctor is ready to prescribe suitable laxatives, cholinergics, adrenergics, and the anti-shock position, and to teach the patient and his family to take and record blood-pressure. Some items in this list are also complications of sympathectomy; and the operation does, of course, carry its own risks. Postoperative dyspnœa on effort, Raynaud's phenomenon, and intercostal neuralgia can be very troublesome, and there is always the danger of the "silent" acute abdomen; but the long and meticulous management called for by drug therapy is not usually necessary after surgery. Summing up his programme for patients whose blood-pressure must be urgently lowered, PICKERING says that "should they be too stupid or uncooperative for this (combined pentolinium and reserpine) therapy, or should he or she loathe (as some do) such an exacting régime, sympathectomy should be considered." As in all conditions which may respond either to medical or surgical treatment, operation should be avoided until medical methods have had first and, if necessary, repeated trial; but the physician must beware of confessing failure too late. Even when a surgeon is called in at some stage of the disease, the responsibility for advising operation, and usually for the patient's subsequent care, rests with the physician. Many hesitate to advise operation because they are uncertain when sympathectomy is likely to do good. A battery of clinical and laboratory tests are at their disposal, but their very number suggests that none are reliable. Of the most commonly used, the amylobarbitone sedation test, WELLS remarks that a

1. Ogilvie, W. H. *J. R. Coll. Surg. Edinb.* 1956, **1**, 123.
2. Wells, C. *Scot. med. J.* 1956, **1**, 8.
3. Chris, S. M. *Brit. med. J.* 1956, **i**, 665.
4. Evelyn, K. A., Alexander, F., Cooper, S. R. *J. Amer. med. Ass.* 1949, **140**, 592.
5. d'Abreu, F. *Lancet*, 1953, **i**, 1169.
6. Morrisey, D. M., Brookes, V. S., Cooke, W. T. *Ibid*, p. 403.
7. Longland, C. J., Gibb, W. E. *Brit. J. Surg.* 1954, **41**, 382.
8. Zintel, H. A., Sellers, A. M., Jeffers, W. A., Mackie, J. A., Hafkenschiel, J. H., Lindauer, M. A. *Surg. Gynec. Obstet.* 1955, **101**, 48.
9. Platt, R., Stanbury, S. W. *Lancet*, 1950, **i**, 651.
10. Stewart, I. McD. G. *Ibid*, 1953, **i**, 1261.
11. Ayman, D., Pratt, J. H. *Arch. intern. Med.* 1931, **47**, 675.
12. Pickering, G. W. High Blood Pressure. London, 1955.
13. Palmer, R. S. *New Engl. J. Med.* 1955, **252**, 22.

good response is encouraging but a poor response does not necessarily mean that sympathectomy will fail to give relief. Perhaps the best that can be said about these preoperative tests is that they ensure the careful assessment of each patient, and that they reduce the risk of overlooking curable unilateral kidney disease and especially phæochromocytoma. WELLS and other surgeons have seen fewer such cases during the past five years than they did when sympathectomy was more popular; and this "suggests very clearly that the diagnosis is being overlooked because patients suffering from hypertension are not sufficiently carefully screened."[2] Finally, we cannot ignore the impact of commercial enterprise, which seeks to mould professional opinion in favour of medical treatment.

There is some evidence that medical and surgical treatment might be successfully combined and that medical treatment may be more effective after sympathectomy.[8] Bilateral adrenalectomy remains very much in the experimental stage,[14] and until its claims become more firmly founded the value of sympathectomy in the symptomatic treatment of hypertension should not be forgotten. Popular opinion is at present firmly against sympathectomy; but "popular opinions," as JOHN STUART MILL remarked,[15] "though often true, are seldom or never the whole truth."

Insulin Zinc Suspensions

EARLY reports of the insulin zinc suspensions suggested that they might have several advantages over the preparations previously used in the treatment of diabetes. First, they might be less likely than the other long-acting insulins to cause allergy, since their delayed action was due not to added proteins, such as protamine and globin, but only to zinc in an acetate buffer.[16] Secondly, they might provide "a homogeneous uniform small series of preparations carefully selected to span the spectrum of timing needs of the diabetic population"[17] when given in a single daily injection. Thirdly, the selection of either the standard insulin zinc suspension (I.Z.S. or lente), consisting of 3 parts amorphous to 7 parts crystalline, or more appropriate mixtures of the quick-acting amorphous and slow-acting crystalline suspensions might give better control in diabetics imperfectly controlled on other insulin régimes. Two articles in this issue illustrate how far these hopes have been realised. Allergy to I.Z.S. does occur, as it does to soluble insulin itself, but it is less common (about 0·8% in Dr. JERSILD's experience) than with protamine zinc insulin (P.Z.I.), globin insulin (G.I.), or isophane insulin (N.P.H.). JERSILD satisfactorily controlled 96% of his 1000 unselected diabetics on a single daily dose of an insulin zinc suspension; and Dr. SPENCER and Dr. MORGANS got similarly satisfactory results in 83% of their 200 patients, most of whom had found some disadvantage in their previous insulin treatment, such as multiple injections of one or two insulins. These results are better than any recorded for other single-daily-injection techniques in comparable groups of diabetics. Compared with their previous insulin treatment, 36% of SPENCER and MORGANS's patients had improved control, and 17% were worse when receiving I.Z.S. Corresponding figures given by GURLING et al.[18] showed improved control in 31% of adults and 37% of children, and worse control in only 4%. SPENCER and MORGANS used only the standard insulin zinc suspension (lente) mixture; but in a large series of diabetics a few will be found in whom ideal control can be achieved only by altering the proportions of amorphous and crystalline insulin zinc suspension from that found in lente insulin. Thus, JERSILD found that 12% of his patients needed a higher proportion of the amorphous and 8% a higher proportion of the crystalline suspension than was present in the standard lente mixture. Experience in this country, particularly with diabetics who need large doses of insulin, has indicated that the "more crystalline" group is bigger than the "more amorphous" one, although these two groups together formed less than 17% in one series of 240 diabetics.[19] Whenever the standard lente preparation gives uneven control during the twenty-four hours, the simplest remedy is to vary the distribution of the diet. If this does not suffice, I.Z.S. amorphous or I.Z.S. crystalline can be premixed with I.Z.S. in a sterile vial in order to quicken or slow the main action of the insulin mixture; and these mixtures are stable. There has been some confusion in the U.S.A., where, in the absence of I.Z.S. amorphous and I.Z.S. crystalline, attempts have been made to mix soluble insulin with I.Z.S.[20] This mixing is successful if performed immediately before injection, as is done with soluble insulin and P.Z.I.; but if such mixtures are stored they may actually prolong rather than shorten the action of the original I.Z.S., because of the formation of more I.Z.S. crystals if the pH of the mixture lies between 5 and 6.

The assessment of the insulin zinc suspensions has been attempted in several ways. JERSILD studied nearly all his patients while they were in hospital and he did six blood-sugar estimations a day for several days. He then noted the proportion of blood-sugar levels falling in the optimal range of 75–200 mg. per 100 ml. Most other published series have been concerned mainly with outpatients and relied largely on urinary sugar estimations, the interpretation of which depends on the level of the renal threshold for glucose. Most authorities conclude that there remains a small proportion of diabetics in whom good control on a single daily dose of insulin zinc suspension, or indeed of any other insulin, is not possible. These patients have wide, apparently spontaneous, fluctuations in insulin requirement, which are naturally unaffected by the particular variety of insulin in use. The safest régime for such patients is two daily doses of I.Z.S., I.Z.S. amorphous, globin, or soluble insulin, since this provides a second opportunity in the day to vary the dose according to the result of urine tests, and any error in total daily dose will be less per injection than when only one daily injection is given.

So much for the credit side of the insulin zinc suspensions: there are also a few disadvantages. As with G.I. and N.P.H., the maximum hypoglycæmic action of I.Z.S. is usually achieved some eight hours after it is given, and clinical hypoglycæmia is therefore most

14. *Lancet*, 1955, i, 86.
15. Mill, J. S. On Liberty. London, 1856.
16. Hallas-Møller, K., Jersild, M., Petersen, K., Schlichtkrull, J. *J. Amer. med. Ass.* 1952, **150**, 1667.
17. Izzo, J. L. *Amer. J. Med.* 1956, **20**, 554.
18. Gurling, K. J., Robertson, J. A., Whittaker, H., Oakley, W., Lawrence, R. D. *Brit. med. J.* 1955, i, 71.
19. Stowers, J. M., Nabarro, J. D. N. *Ibid*, p. 68.
20. Holcomb, B., Page, O., Stephens, J. *Northw. Med., Seattle*, 1954, **53**, 239.

likely in the afternoon, not uncommonly at the time when working diabetics are travelling home. This tendency must be countered by providing an adequate midday meal and an afternoon tea which the patient eats before he sets out for home. I.Z.S. has a slower onset of action than soluble insulin and is therefore best taken about three-quarters of an hour before breakfast rather than the fifteen minutes usually recommended for soluble insulin, and this longer interval is unwelcome to the late riser. Several workers [18 19] have referred to the difficulty of overcoming ketosis with I.Z.S., even with very large doses; but the same can be said about other long-acting insulins, and we may conclude that soluble insulin must be used, if not instead of, then at least as well as, I.Z.S. in the presence of ketosis. Any "one-shot" insulin programme has, of course, less flexibility than a "two-shot" method in allowing variation in the time and amount of the evening meal.

The general experience in this country has been that when a diabetic is transferred to I.Z.S. from the older insulins the dose has often to be increased to obtain the best control. The increase is greatest when the previous régime consisted of P.Z.I. alone or P.Z.I. plus soluble,[18 19] and it is probably due to the fact that, if sufficient P.Z.I. is given to prevent postprandial hyperglycæmia, nocturnal hypoglycæmia is very likely to result from the sustained and steady hypoglycæmic action of this insulin. This consideration is important in limiting the tolerated dose of P.Z.I., but it is much less true of I.Z.S. given before breakfast, because, though I.Z.S. also lasts for twenty-four hours, it exerts its main hypoglycæmic action during the day. It is advisable, therefore, when transferring a diabetic to I.Z.S., to increase the initial dose of I.Z.S. by about 10%. The urine should be examined frequently during the first few days, and supplements of soluble insulin may be given before the evening meal if further increases in I.Z.S. are unable to overcome the rising glucose excretion. Patients should be seen at least once a week until satisfactory control has been established. JERSILD makes the interesting incidental observation that the urinary excretion of sugar was greatest in the patients without retinopathy or nephropathy, although there was no significant difference between the blood-sugar levels of these patients and of those with ocular and renal complications. Patients with the relatively low renal threshold for glucose, besides having fewer complications, were more prone to mild ketonuria than patients with higher renal thresholds for glucose. This finding may be related to the conclusions of ALIVISATOS and MCCULLAGH,[21] who classified 172 diabetics into categories of stable and brittle diabetes and showed that degenerative complications were commoner in the stable group, although within the stable group there were fewer complications when diabetic control had been good. This division of diabetics will be confirmed by those who see a lot of diabetes, although the reason for it is not yet clear.

One complaint about the introduction of the insulin zinc suspensions has been that there are now so many alternative insulins that life is very complicated for both diabetics and doctors. But it is equally true, as COLWELL [22] has pointed out, that if the insulin zinc suspensions had been produced twenty years ago, when SCOTT and FISHER [23] described their work on the effects of adding zinc to insulin, there would have been no incentive to develop the protein depot insulins. There seem now to be good reasons to use the insulin zinc suspensions for all new cases of diabetes requiring insulin, so that G.I., P.Z.I., and N.P.H. insulins should gradually fall into disuse as new generations of diabetics grow up.

21. Alivisatos, J. G., McCullagh, E. P. *Amer. J. Med.* 1956, **21**, 344.
22. Colwell, A. R. *Diabetes*, 1954, **3**, 162.
23. Scott, D. A., Fisher, A. M. *J. Pharmacol.* 1935, **55**, 206.

Heads to be Broke?

A SOCIAL anthropologist, or better a psychopathologist, might be able to explain why the sight of our fellow men inflicting simulated injuries on one another has come to play so large a part in our entertainments. Most criticism of the influence of this kind of violence has been on general grounds, some thinking that precept leads to imitation, others, remembering Mr. Punch's slapstick, that watching pulled punches reduces our hypothetical impulse to inflict packed ones. There is one specific aspect of the spectacular fights of the films which nobody seems to have stressed, however, and that is the contempt which they are likely to breed in the public mind for head injuries.

Somebody once computed the number of times that the indestructible Sexton Blake was knocked out: it ran into three figures. There are very few film heroes who complete the appointed course of an exploit without being knocked unconscious at least once—often more than once, and often with a heavy object—and, moreover, they give as good as they get. They, and the criminals, spies, or other obnoxious persons whom they batter, show as a rule signs of nothing more than temporary inconvenience. Any regular filmgoer could be pardoned for concluding that violent blows about the head are a safe and convenient method of rendering a person unconscious, and that he will recover from the effects of them within minutes, fit to ride, drive, and shoot with unimpaired vigour. Previous generations might have got the same idea from literature, though STEVENSON, in *Kidnapped*, had an inkling that "a dunt o' the heid" might be subjectively unpleasant. It is the visual presentation, the weight of the blunt instruments, the force of the blows, and above all the reiteration of the lesson which might alarm us today. In a recent and unselected afternoon of children's television, there were four (or was it five?) of these knockings-out—one with an axe-handle, one with a bludgeon, one with a revolver-butt, and one or two with unidentified blunt instruments—involving, among other things, the repeated banging of an apparently unconscious man's head on an apparently stone floor. Like the instruction in the mishandling of firearms, given in some of these programmes by actors who are clearly unaccustomed to such weapons, these assaults on the human skull are poor education in accident prevention; for the main danger of underrating head injuries lies in the risk that people will dismiss accidental concussion too lightly, rather than that they will imitate the films.

The answer is not an easy one to suggest, given that heroics of a rather fatuous kind are the most entertaining and edifying matter we can reproduce for ourselves and our children. Cowboys must presumably hit one another, as Indians have to bite the dust: they have been doing so for some years without

evident mischief. And there are no really safe methods, other than boredom, of rendering an adversary unconscious. But perhaps it would not be asking too much if now and then the course of the plot were to suggest that a head injury is a serious matter, that any person who has been rendered unconscious in that way should be regarded as potentially a very sick man, and that death or permanent disability are quite possible after blows on the skull.

Annotations

REDISCOVERY OF THE PATIENT

IN the United States, as in this country, medical education is the subject of discussion and concern, but when the representatives of our medical schools meet in London next week they may well speak with envy of the "unrestricted" grants, amounting to 12½ million dollars, which nineteen American schools have lately received from the Commonwealth Fund to help them "in strengthening and improving their programs of medical education." As the annual report [1] explains, it is a measure of the Fund's conviction of the present urgent needs and exceptional promise of medical education that this money has been largely found from capital. The report also contains a valuable review of the trends of medical education in America during the past ten years. Many of these, including post-war interest in mental health and in environmental medicine, lead directly to the patient, and one of the lessons which the schools seem to be learning afresh is that "the patient is the only reason for medicine." But it is perhaps truer to say that the patient is being shown to the students from a new angle. He still comes to the doctor or the hospital for help with an injury, a lump, or a pain, but the students are now being taught to see his illness as an "aspect of living, not an isolated episode with a clear beginning or end." In practice this has meant that the students are brought into earlier and closer contact with the patient and that the pattern of teaching is changing to give more importance to the outpatient clinic as opposed to the ward-round. The ambulant patient has led the students to his home and workshop and shown them the importance of aftercare. These same ideas are also being applied to medical education in this country, and we lately described their introduction, with the help of the Rockefeller Foundation, in the university general-practice teaching unit at Edinburgh.[2]

The student, as well as the patient, the Fund's report suggests, has been regaining the place in the schools from which the "growth of research and the advance of science" have tended to push him. Yet he is the common denominator of medical education, and research-workers are now, with profit, studying his attitudes and behaviour and considering such questions as whether early contact with patients reinforces or detracts from the student's interest in preclinical science. The fund also casts a sympathetic eye on the problems of the medical teacher "caught in a tight squeeze between the demands of teaching, research, administration and outside responsibilities." No-one can teach well who only teaches, and this is especially true in the medical faculty where good teaching is often dependent on the stimulus of research. But the proper division of his time and interest remains one of the teacher's real problems.

The question is sometimes asked today whether the medical school should remain within the universities. By its generous support to the universities the Fund has made clear that it believes they should. The Fund sees the university as a social institution, part of the community, and concerned with the affairs of man; and if the medical school gains much from an academic setting it offers in return adequate and essential "equipment for the study of the nature and behaviour of man," and is in fact the university's potential laboratory of applied research.

1. Report for 1956 of the Commonwealth Fund, Harkness House, 1, East Seventy-Fifth Street, New York, 21.
2. See *Lancet*, Sept. 22, 1956, p. 612.

PRESSURE-VOLUME RECORDING IN EMPHYSEMA

IN two recent papers Attinger et al.[1 2] deal with the relative merits of time-volume and pressure-volume investigations in patients with pulmonary disease. Time-volume studies include the conventional functional tests, such as vital capacity and maximal breathing capacity, and other measurements such as timed vital capacity and maximal expiratory flow-rate. Attinger et al. point out that though these tests are a help to the clinician, they are often a poor reflection of the patient's actual incapacity. Pressure-volume recordings, on the other hand, allow measurement of pulmonary compliance and flow-resistance and of the work involved in breathing.

Attinger et al. are concerned with the changes in viscous-elastic properties in the lungs in chronic emphysema, and they have measured intraœsophageal pressures and air-flow rates by the pneumotachograph to examine pulmonary pressure-volume relations in this disease. With characteristic unequal distribution of ventilation in the emphysematous lung the distension of different areas of lung varies; with high respiratory rates only normal alveoli are ventilated, while with low respiratory rates there is more time per breath for equilibration throughout the lung and the passage of respiratory air into and out of the diseased alveoli. Because of the increased time for air passage, the effective lung-volume increases at slower respiratory rates, and the compliance (measured as change in lung-volume divided by intraœsophageal pressure difference between instants of zero tracheal air-flow) also increases. The loss of elasticity and increased mechanical resistance in the emphysematous lung lead to an active expiratory effort, which produces high positive intrapulmonary pressures, which in turn cause the collapse of airways; air-flow then decreases until intrabronchial pressure rises high enough to overcome the intrapulmonary pressure, when air-flow starts again. This type of cycle resulting from this check-valve mechanism is common in emphysema and may not always be recognised from time-volume lung tests. Pressure-volume measurements, on the other hand, show up the greatly increased work/cycle (as an increased area enclosed by the pressure-volume trace) resulting from a high mechanical resistance in the emphysematous lung. Approximate values show an inspiratory resistance of four times normal and an expiratory resistance of seven times normal; and there is a considerable drop in compliance when the respiratory rate is increased. These findings are in accordance with those of Fry et al.[3] and Mead et al.[4] Pressure-volume diagrams show that most of the work of breathing goes toward overcoming mechanical resistance and only a small part toward overcoming elastic forces; further, the pressure necessary to obtain a given flow-rate increases progressively during expiration. In consequence, a large part of the patient's energy and oxygen uptake are spent on the breathing process alone, and the work of breathing helps to determine the incapacity of the emphysematous patient.

1. Attinger, E. O., Goldstein, M. M., Segal, M. S. *Amer. Rev. Tuberc.* 1956, **74**, 210.
2. Attinger, E. O., Goldstein, M. M., Segal, M. S. *Ibid*, p. 220.
3. Fry, D. L., Ebert, R. V., Stead, W. W., Brown, C. C. *Amer. J. Med.* 1954, **16**, 80.
4. Mead, J., Lindgren, I., Gaensler, E. A. *J. clin. Invest.* 1955, **34**, 1005.

Attinger and his colleagues have performed a useful service in underlining the importance of making simultaneous records of pressure and volume in order to gain accurate knowledge of changes in lung characteristics. Those who support the conventional time-volume pulmonary tests could no doubt make a case to show their advantages on such grounds as little disturbance to the patient and simple apparatus; but Attinger et al. find that measurements of compliance and mechanical resistance reveal abnormalities when the usual pulmonary function tests are still within the normal range. Moreover, the simultaneous measurement of pressure has the unquestionable advantage over time-volume measurements alone that the work involved in respiration may be computed. Attinger et al. declare that "the clinician should realize that an evaluation of ventilatory function on the basis of volume measurements or volume-time relationships alone may be as incomplete and as misleading as evaluating cardiac function on the basis of cardiac output without taking into consideration blood pressures and vascular resistance."

ONE GENE: ONE ENZYME?

WE lately discussed [1] some interesting observations by Stanbury and his colleagues [2 3] relating to the metabolism of iodotyrosines in certain patients with goitrous cretinism. These observations showed that the blood of these patients contained mono- and di-iodotyrosine; and that labelled mono- and di-iodotyrosine, injected intravenously, were largely excreted unchanged in the urine. It seemed likely that these patients did not have the deiodinating enzyme which is normally present both in the thyroid and in other tissues. Querido, Stanbury, and their colleagues [4] have now obtained direct confirmation of the absence of this enzyme. They showed that slices of sheep or ox thyroid, or of human nodular goitres, were able to deiodinate diiodotyrosine. Slices from the goitre of one of their patients with familial goitrous cretinism, however, left the diiodotyrosine unchanged. As the experiments were done under identical conditions there seems no doubt that the cretin's thyroid contained no deiodinase. The presumed result is a life-long leak of iodotyrosines from the thyroid into the blood and then the urine, of sufficient magnitude to cause serious iodine deficiency; and both goitre and cretinism can be explained on a basis of iodine deficiency.

McGirr et al.[5] have provided more information about the genetics of this biochemical lesion. They have made extensive studies,[6 7] both biochemical and genetic, of an intriguing family of itinerant tinkers living in South-West Scotland. No less than 10 members of this family are goitrous cretins. From this inquiry it was concluded that the defect was determined by the presence or absence of a single autosomal recessive gene. In their latest paper McGirr et al. have been able to demonstrate both mono- and di-iodotyrosine in the blood and urine of some of the affected members. This means in all probability that the defect in the tinker family is the same as that studied by Stanbury and Querido in their goitrous cretins. By combining the work of both groups we can surmise that a single recessive gene controls the presence or absence of a single deiodinating enzyme; and that the absence of this enzyme explains all the clinical features observed in these particular goitrous cretins. McGirr et al.[5] are careful to point out, however, that this gene-and-enzyme defect accounts for only one group of non-endemic goitrous cretins; at least two other apparently unrelated biochemical lesions have been demonstrated in clinically similar cases.

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5. McGirr, E. M., Hutchison, J. H., Clement, W. E. *Lancet*, Nov. 3, 1956, p. 906.
6. McGirr, E. M., Hutchison, J. H. *Ibid*, 1953, i, 1117.
7. Hutchison, J. H., McGirr, E. M. *J. clin. Endocrin.* 1954, **14**, 869.

MAMMATROPHIN-SECRETING PITUITARY TUMOURS

SEVERAL mice subjected in 1951 to whole-body ionising radiation in an atomic explosion were found in old age to have pituitary tumours.[1 2] Furth and his colleagues [3] examined 9 of these tumours by grafting them into young hosts of the same strain, and 3 gave evidence of adrenotrophic secretion, 1 was predominantly somatotrophic, and 5 stimulated the mammary glands of their hosts. Mammary stimulation was reflected in duct or lobular growth, or both combined, and by milk-like secretion. Some grafts were dependent on œstrogen, but others were autonomous. There was no sign in the hosts of increased production of œstrogen. Furth et al. conclude that these tumours were secreting a mammatrophic hormone (formerly better known as prolactin), that they were of the same nature as rat pituitary tumours induced with œstrogen, and that they had similar properties.[4] Furth et al. believe that the ultimate mechanism of induction is the same: œstrogen is either administered or is produced in excess by ionising radiation, first by atrophy, then by granulosa-celled œstrogen-secreting tumours which arise in the ovary.

These mammatrophin-secreting tumours provide an opportunity for comparing the action of this hormone as secreted from grafts (or obtained by extraction) with that derived from cattle and sheep pituitaries. It is known that extracted prolactin does not influence the mammary rudiments of male mice in the absence of added œstrogen, though in the rat it does. The mammary glands of male mice with mammatrophin tumours consisted of collapsed rudimentary ducts only; but the mammary glands of castrated males bearing ovarian grafts in addition were similar to those of intact females. A graft of a pituitary tumour induced in a rat with stilbœstrol caused both proliferation and secretory changes in the mammary gland, even in gonadectomised animals. As with prolactin there is here a species difference in response. The validity of the conclusion that the grafts were secreting mammatrophin would have been enhanced had they been grown in hypophysectomised animals, for in some mouse strains ovarian hormones stimulate the male rudiment to extensive proliferation, and even milk-like secretion, provided that a mere fragment of hypophysis is present: otherwise there is no response. Therefore, to prove the presence in the grafts of mammatrophin the hosts own hypophysis must be completely removed. Furth et al. state that in unpublished experiments in rats the mammatropic-tumour grafts replaced natural hypophyseal prolactin in this respect. No reference is made to comparison by the pigeon-crop test, but just as prolactin injections into pigeons caused enlargement of abdominal organs, so there was a great increase in the size and weight of livers and kidneys in mice and rats bearing these tumour grafts. It may be argued that extracted prolactin contains traces of somatotrophin, and on Furth et al.'s admission some and possibly all of the pituitary tumours were of mixed cells containing somatotropes as well. It has been reported, however, that highly purified mammatrophic hormone from the tumours has induced somatotrophin-like action on the tibial plate.

Pituitary cells which secrete mammatrophin are called mammatropes, to conform with thyrotropes,

1. Upton, A. C., Furth, J. *Proc. Soc. exp. Biol., N.Y.* 1953, **84**, 255.
2. Upton, A. C., Furth, J. *J. nat. Cancer Inst.* 1955, **15**, 1005.
3. Furth, J., Gadsden, E. L., Clifton, K. H., Anderson, E. *Cancer Res.* 1956, **16**, 600.
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adrenotropes, and somatotropes. They contain coarse acidophil granules shown with the Mallory-Martin stain.[5] It has been possible by this means to identify a normal pituitary cell from the appearance of those in the functioning tumour. In accordance with physiological expectation, mammatropes are stimulated to proliferate by œstrogen.

These tumours have provided a means of studying the functional relationships between gonads, pituitary, and mammary gland. Their constituent cells can be studied chemically and morphologically and they provide abundant raw material for mammatrophin, by way of grafting. The relation of this hormone, in synergism with œstrogen, to mammary tumours requires investigation, both in the presence and absence of milk factor. Furth et al. have observed secreting tumours, in animals of a strain in which mammary tumours are rare, for periods up to 391 days in females and 431 days in males, without finding any mammary growths. The injection of extracts would enable the test period to be prolonged. Among secreting pituitary grafts some were œstrogen dependent, others autonomous. Autonomous tumour cells, as well as dependent ones, will grow in œstrogen-conditioned hosts and so, as Furth et al. point out, a cell population may consist of both types. This, they suggest, may help to explain the response of certain human tumours to hormone therapy. Remissions are almost invariably followed by relapses: thus, the tumours most responsive to hormones are perhaps composed predominantly of dependent cells with relatively few that are autonomous. Hormones influence dependent cells, hence remissions; but there remain the minority which are autonomous and uninfluenced by hormones, and they continue to proliferate.

PYELONEPHRITIS IN THE NEWBORN

PYELONEPHRITIS in adults is becoming more widely recognised as a common disease,[6] but until recently the same disease in infants has not attracted much attention. By careful observation Porter and Giles [7] have discovered five cases of pyelonephritis which developed in the first month of life with no obvious congenital abnormality and led to death before the age of 5 months. One was an acute case in which the infant died at $3^1/_2$ weeks, with changes typical of extensive acute pyelonephritis. The other cases, in which the infants died at ages from $14^1/_2$ to 21 weeks after longer illnesses, showed changes in the kidneys closely resembling those of chronic pyelonephritis in the adult. Two main differences emerged: there was little coarse asymmetrical scarring, and crescent formation was prominent. Porter and Giles suggest that the first of these two differences may be due to the comparatively short period of the disease process; but, after all, we know that lesions tend to heal more completely in infancy than in later years. As regards the second difference, Porter and Giles suggest that epithelial crescents may develop more readily in the newborn in response to various stimuli and are not specific for glomerulonephritis. This is undoubtedly true, for up to the early twenties occasional crescents can be seen even around tuberculous lesions and in chronic pyelonephritis. These workers suggest also that microscopic congenital abnormalities of the nephron may possibly play a part in the development of the infection. Darmady and Stranack found by microdissection of the kidneys [8 9] that in 3 out of 4 specimens the nephrons were immature, as in the kidneys of premature babies. The numbers are small, but it is an attractive hypothesis that these congenital abnormalities predispose towards renal infection and thence to relatively slight scarring at an early age. Organs are not always fully developed at birth (e.g., the gastric mucosa and the sexual organs). The kidney glomeruli are known to be in this category, and it would be surprising if the tubules could not also be included. The supposition that incomplete development renders the kidney more liable to infection and thence to scarring is more easily tenable than the suggestion that congenital dysplasia by itself leads to the scarring recognised in later life.[10]

Clinically, Stansfield [11] emphasised the frequency of pyelonephritis in children and pointed out that the commonest symptoms were not referable to the urinary system at all, but were anorexia, vomiting, and loss of weight. He suggested that all infants with these symptoms should be specially investigated for pyelonephritis, and he advocated an accurate cell-count of the urine for the purpose. Porter and Giles reinforce this plea and urge that all known cases should not only be treated thoroughly but also be followed up as far as possible because relapses are common.

HOSPITAL COST ACCOUNTING

A WORKMANLIKE report from Birmingham [12] reminds us that the difficulties of hospital costing loom larger as more and more detailed analyses are undertaken. The difficulties seem to be twofold—logical and tactical.

The logical difficulties spring from the attempt to apportion overhead expenditure between different departments: here a basis of apportionment is often not logically apparent, and some artificial criterion has to be invented. If an intelligible answer could be given to the question "suppose department A did not exist, how much less would our overheads be?" then the problem would be simple. But often the answer would be "no less at all," or "without department A the hospital would not exist, so the question is meaningless." Occasionally it may be asked whether department A could be replaced by some "outside" service provided by industry or commerce; but even in this apparently straightforward comparison there may be room for much argument as to just how much of deadweight overhead should be charged to department A in assessing its present cost.

The tactical difficulties are those of ensuring that prime records are informative enough for both detailed and accurate analysis. Anyone helping to compile cost records will unearth a rich and busy world of protective reflexes varying from "we always put such-and-such in that column" to "watch your step in column 6—they will cut your allocation of x if that figure falls below so-and-so," or "avoid large variations in *that*—it will only lead to questions." These defensive remarks, with their hint of "cookery," do not come from rogues whose cunning is undermining the whole administrative machine; they are the normal reactions of intelligent and conscientious people who fear that administrative decisions will be based by "them" on inadequate data.

It is one thing to judge efficiency by cost indexes; it is another to see the convalescent patient turning her head away from a dollop of institutional dinner. The dinner is part of a catering service which is laudably economical in its cost per patient per week, but is a failure in terms of value for money—because much of the food produced is unpalatable and therefore uneaten. Where in the punched-card routines does this fact emerge? Perhaps in our hospitals we need, in addition to costing, "value-for-money" committees to scrutinise the *quality* of each service in relation to its cost.

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Special Articles

LATENCY AND PROGRESSION IN TUMOURS
THE NATURAL HISTORY OF PROSTATIC CANCER *

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THE normal prostate surrounds the urethra and is traversed by the ejaculatory ducts, which open into the prostatic urethra. These structures divide the gland into localised areas, the so-called "prostatic lobes"—anterior, middle, posterior and two lateral. These lobes, however, are purely anatomical and have no functional significance. Functionally the prostate is divided into inner and outer gland groups. The inner group is made up of short periurethral glands and somewhat larger submucosal glands. This inner group is partly separated from the main mass of prostatic glands—the outer prostate—by an indefinite capsule. The inner glands are relatively inconspicuous in the young but become increasingly prominent with age. Benign nodular hyperplasia develops from this inner gland group. A series of changes also occurs in the outer group of glands with age: there is at first atrophy of epithelium and stroma, but later there may be hyperplasia and neoplasia.

Prostatic carcinoma almost invariably begins in the outer group of glands. Because of this origin in the outer part of the gland, the tumour, while still very small, infiltrates the prostatic capsule and involves the rich surrounding lymphatic and venous plexuses. Even with tumours which have caused no clinical symptoms of disease, invasion of the capsule has been found in 75% of cases (Franks 1954a), invasion of lymphatics in 85–100% of adenocarcinomas but only 5% of squamous tumours (Kahler 1939), and of blood-vessels in 37% (Franks 1954a). Lymphatic involvement occurs regardless of the size of the tumour or the age of the patient (Starklint 1950).

In clinical cases the findings are similar. Jewett (1949) gives the following figures:

> Between 1904 and 1948, 1961 cases of prostatic carcinoma were seen at the Brady Urological Institute. Radical prostatectomy was performed 190 times (9·7%); of these cases only 78 were thought to be confined to the prostate on clinical examination. Subsequent histological examination showed that in fact only 41 (2·1%) of these cases had no extraprostatic spread.

Routine sternal-marrow puncture in cases of prostatic cancer will show tumour in at least a third of all cases (Clifton et al. 1952) and at necropsy metastases can be found almost invariably in patients who have died of the disease (Franks 1956a). (I shall return to this question of metastases later.)

Latent and Active Prostatic Carcinoma

Structurally all prostatic cancers are similar, but biologically two types can be distinguished—the active or clinical cancer, and the latent or unsuspected cancer. The rate for clinical cases in 1954 in the United Kingdom was 15·7 per 100,000 living (Registrar-General 1955) and it causes about 6·5% of all tumour deaths in men over the age of 50 years. As a cause of death, however, it is relatively uncommon, being responsible for only 1·4% of all deaths in men over 50 years of age. The disease has apparently increased in frequency in the last half-century, presumably because of the increased life-span. The figures for the United States are similar (Steiner 1954).

* Based on material presented at the third National Cancer Congress, Detroit, June, 1956.

Prostate glands removed at necropsy from patients who have died of some other disease are commonly found to contain histological carcinomas. This remarkable finding was reported by Rich in 1935 and has since been confirmed by very many workers (see Franks 1954a). At least 30% of all men over 50 years old have these lesions. These tumours are indistinguishable histologically from active clinical cancers, yet they have not grown and killed the patient. Many show unmistakable evidence of infiltration of blood-vessels and lymphatics, yet gross distant metastases are rarely found (Arnheim 1948). The mean survival-time of patients with clinically diagnosed cancer but without metastases, given no endocrine treatment, is only two years (Nesbit and Plumb 1946), and since it is unlikely that all the tumours found at necropsy should have developed shortly before death it seems reasonable to assume that the growth-rate of many of them is very low. These are latent or retarded cancers. A distinction must therefore be made between the disease—prostatic cancer—which behaves in the same way as cancer in other sites, and the finding of an area with the histological structure of prostatic cancer.

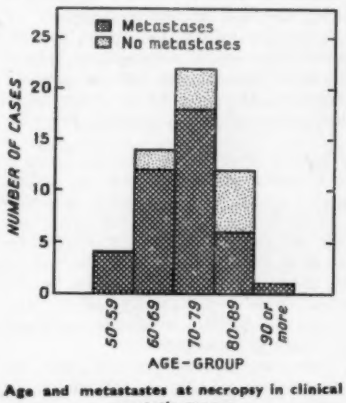
Age-incidence

Both clinical and latent prostatic cancer are rare before the age of 50, and thereafter become increasingly frequent until the eighth decade. After the age of 80, clinical cases become less common; but accurate figures for the true incidence are not available, and this statement is based mainly on the number of cases coming to hospital (Arnheim 1948, Harnett 1952, Franks 1956b). Latent cases, however, become increasingly common after 80 years of age (Hirst and Bergman 1954), and most men over the age of 90 have these lesions.

TABLE I—AGE AND DISTRIBUTION OF METASTASES AT NECROPSY IN CLINICAL PROSTATIC CARCINOMA

Age at death (yr.)	No. with metastases	No. without gross metastases	Total no. of cases
50–59	4	0	4
60–69	12	2	14
70–79	18	4	22
80–89	6	6	12
90 +	1	0	1
All	41	12	53

Another unexpected finding also suggests that the character of some prostatic tumours in the elderly differs from those in younger men. I have recently studied at necropsy the distribution of metastases in 53 clinically diagnosed, histologically confirmed cases of prostatic cancer (Franks 1956a). 12 of these had no gross metastases at necropsy; most of these cases were over 80 years of age (see table I and figure). The absence of metastases was not directly related to the duration of the disease; the interval between diagnosis and death varied from one week to over five years. This series is small; but the British Cancer Registry, in an analysis of over 3000 cases of prostatic cancer, has found similar results (A. McKenzie, personal communication). With tumours in



Age and metastastes at necropsy in clinical prostatic cancer.

other sites—for example, the stomach—this pattern is not found.

Latent Carcinoma in Clinical Cases

Some cases of prostatic cancer diagnosed clinically may be of this biologically latent type. As might be expected, in these cases the cancer is usually discovered accidentally.

It is well known that some patients with prostatic (or other) cancer may survive for many years without treatment. Nesbit and Plumb (1946) have shown that 9·1% of all untreated patients will survive for five years, and they record several cases who have survived for fifteen years or more—some with metastases at the time of diagnosis. Thompson (1942) has reported a five-year survival-rate of 61·0% in a small group of cases (grade-I prostatic cancer) treated by perurethral resection alone. This is considerably better than recorded results after any other form of treatment.

Similarly carcinomas found after prostatectomy in patients with clinically benign prostatic enlargement also have a good prognosis. Nesbit and Baum (1951) reported on 42 such cases, only 2 of whom had died of prostatic cancer, 14 had died of other causes and 26 were still alive at the time of survey—17 for more than three years, 9 for less than three years. Edwards (1955) followed up 23 similar patients who had no treatment after the original operation for benign enlargement; 16 showed no evidence of carcinoma after at least five years; 5 died of intercurrent disease, and 2 died of prostatic cancer. I am at present following up a group of 200 patients with clinically benign prostatic enlargement treated by subtotal prostatectomy. The tissue removed was examined by the step-section technique. 19 of these patients had undoubted histological cancers; 8 are dead but none of prostatic cancer; 2 died in the postoperative period, and 6 of intercurrent disease three to thirty-nine months after operation. 3 had œstrogen treatment. Of the 11 survivors, 4 are being treated with stilbœstrol and 7 are untreated; all are well, having so far lived for more than three years. Many of these patients presumably have cancers which are biologically latent. The fact that patients with this type of carcinoma have a long survival period must always be borne in mind when assessing the results of treatment, particularly in the so-called "early" cases found accidentally or after intensive investigation.

Latent Carcinoma in Other Organs

Latency is not a property unique to cancer of the prostate. Unsuspected, symptomless, histologically malignant tumours can be found in other organs, particularly the lung, kidney, thyroid, and perhaps stomach and breast (Gatch and Culbertson 1952). In the skin and uterine cervix carcinoma in situ is a well-recognised condition which shows the cytological characters of malignancy yet may remain latent for many years. Some cases may develop into active carcinomas, others may regress. Certain experimental tumours in animals behave similarly. Some of these problems have been discussed in an earlier paper (Franks 1954b; see also Cowdry 1955).

A major difficulty here is that these tumours have a histological structure identical with that seen in active tumours; yet one grows and kills the patient, whereas the other does not. If all tumours with a similar histological structure grew at the same rate it would be reasonable to assume, as is widely done, that the size of the tumour and the time it had been present before treatment was started would materially affect the survival-time. We have no definite evidence on these points as far as the prostate is concerned.

In other organs, however, this is not the case, as Bloom (1950) found in a study of cases of breast cancer at the Middlesex Hospital, London (see table II). Only in grade-I cases (histological grading) was there any appreciable increase in survival-rate with earlier treatment. About 80% of grade-I cases, 50% of grade-II cases, and 20% of grade-III were alive after five years, yet the structure of the tumours was the same in the fatal cases as in the survivors. Lewison et al. (1953) at the Halsted Clinic re-examined the histological sections from patients with breast cancer who had survived ten years or more but found no characteristic morphological features. Bloom (1950) also found that the size of the tumour at the time of treatment bore no relation to ultimate prognosis, and Stearns and Deddish (1956) have reported a similar finding in cancer of the rectum and distal sigmoid.

TABLE II—DURATION OF SYMPTOMS AND PROGNOSIS ACCORDING TO HISTOLOGICAL GRADE OF BREAST TUMOUR (DATA OF BLOOM 1950)

Duration of symptoms	Grade I		Grade II		Grade III	
	No. of cases	Alive at 5 yr. (%)	No. of cases	Alive at 5 yr. (%)	No. of cases	Alive at 5 yr. (%)
6 weeks or less ..	24	92	46	41	31	29
3 mos. or less ..	45	87	83	47	56	29
3–6 mos.	28	86	59	42	38	26
6–12 mos.	39	72	47	43	32	25
1 yr. or more	40	78	36	50	29	21

In my series of necropsies on cases of prostatic cancer, several of those with widespread metastases showed no significant structural difference from others in which no gross metastases were present. Histologically, in some of these cases there was extensive involvement of lymphatics and blood-vessels; it seems that systemic dissemination of tumour fragments must have occurred, yet distant secondary deposits had not developed.

Latency in tumours is unrelated to size and histological differentiation. Latent tumours may be large or small, well differentiated or anaplastic. It is of course well known that a primary tumour may become manifest but metastatic deposits remain latent for many years. There is a dissociation between primary and secondary tumours. Changes need not necessarily affect both simultaneously.

Some of the limitations in cancer diagnosis and grading by present methods have been critically discussed by McKinnon (1954, 1955). One is forced to conclude that the microscopic appearance of a tumour is not always directly related to its biological activity. This is perhaps not surprising, because the microscope does not necessarily reveal any reaction of the host against his tumour. There is no reliable method, other than the behaviour of a tumour in the patient, of assessing its biological activity.

Progression in Tumours

The experimental work of Berenblum (Berenblum 1941, Berenblum and Shubik 1947) and Rous and his colleagues (Friedewald and Rous 1944) has thrown some light on the problem of progression of tumours. Two phases in tumour growth have been recognised: a phase of initiation in which a small proportion of cells are permanently altered, and a phase of development or promotion during which the cells multiply and produce visible and finally malignant tumours. The phase of initiation in skin tumours requires a specific carcinogen, but the phase of development may be brought about either by a carcinogen or by a non-specific irritant which would not by itself normally produce a tumour. The initial application of the carcinogenic stimulus may cause no visible changes in the affected cells or it may cause a lesion which is histologically malignant but disappears if the stimulus is withdrawn. The development of new and irreversible properties from initiation to malignant neoplasia, Foulds (1951, 1954) has called "progression."

In the laboratory animal progression may halt spontaneously for a long time at any point and may not necessarily reach an end-point within the lifetime of the host. More recently Berenblum (1954) and others have suggested that after initiation the promoting stimulus leads to local proliferation, but until the colony reaches the so-called "critical size" it is not "self-perpetuating." Once it reaches this critical size it then provides its own stimulus to growth and develops as a true neoplasm. There are thus four stages: (1) initiation, (2) promotion, (3) critical size, (4) clinical tumour. The period between stages (3) and (4) can conveniently be called the stage of "preclinical" tumour.

The latent carcinomas could therefore form a mixed group which included all tumours from the stage of initiation to that of the "preclinical" tumour, and the behaviour of each individual tumour would depend on its stage. Similarly many of the problems of delayed and latent metastases could be explained if it was assumed that metastasis is not a property of fully developed tumours only but can occur at any stage in progression. The development of the metastatic tumour also would depend on the stage of development of the metastatic cells. It seems to me not improbable that this should occur, because we have seen that vascular and lymphatic involvement are common in many of the latent carcinomas and it is well known that even apparently normal tissues may be found as emboli in distant organs.

The Causes of Latency

In certain tumours in laboratory animals latency can be induced by many different agents (Franks 1954b; see also Cowdry 1955). In man, however the causes of latency are unknown; but it may be due to local factors (i.e., biological activity of the tumour) or general factors in the host. There is no reliable method of measuring the biological activity of human tumours. Morphologically the active and inactive tumours are identical. Of the general factors, in the prostate and breast a state of biological latency can be artificially induced by endocrine treatment and it is possible that hormones may be in some way responsible for latency in tumours in these organs. Age, as we have seen, appears to be an associated factor, but whether this is due to an intrinsic property of the ageing process or to accompanying hormonal changes is not known. In experimental work carried out in collaboration with Mr. P. C. Williams and Dr. F. C. Chesterman, the latter has found in guinea-pigs after hormonal treatment a type of epithelial metaplasia which is otherwise seen only in old animals. The cause of latency in other organs is unknown.

Many other questions remain unanswered. Do latent carcinomas develop into clinical cancer? Do all cancers begin in this way? Do tumours in different organs begin in different ways—some as latent and others as active carcinomas ab initio? This may be a point of some importance because in many of the organs in which this latent type of carcinoma may be found, the results of radical surgery are disappointing, particularly when compared with the results in other organs—e.g., the rectum—where latent carcinomas are infrequent. Clinical carcinomas which arise from pre-existing latent foci may well have spread long before they become clinically manifest. If this is so, the factors responsible for latency should be investigated.

Summary

Prostatic carcinoma begins in the outer group of prostatic glands and may invade the capsule, lymphatics, and blood-vessels while still very small.

Over the age of 80 clinical cases probably become less frequent but latent or inactive cases become increasingly common. Over this age a large proportion of clinical cases have no metastases, and the absence of metastases is unrelated to the duration of the disease. Metastases are rarely found in latent cases; but in both latent cases and clinical cases without metastases, local infiltration and invasion of blood-vessels and lymphatics is commonly found microscopically.

There is no reliable method of distinguishing latent from active carcinomas. Morphologically they are indistinguishable and some of the cases diagnosed as clinical cancer may be of this biologically latent type. This applies particularly to cases discovered accidentally (for example, after subtotal prostatectomy for benign enlargement) and to "early" cases discovered after intensive investigation. The survival period of such cases is long even if no treatment is given.

Tumour latency is also found in other organs and in certain experimental tumours. Its cause is unknown, but in some cases it may be hormonal. It is possibly associated with ageing. This should be a profitable field for investigation.

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EMERGENCY ADMISSIONS TO HOSPITAL IN WINTER

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M.D. Camb.
CHAIRMAN, EMERGENCY BED SERVICE COMMITTEE, KING EDWARD'S HOSPITAL FUND FOR LONDON

A REVIEW of the work of the Emergency Bed Service (E.B.S.) for the past few years brings out some interesting features, and may serve also to emphasise what we expect in the winter now approaching. In what follows, applications for general acute cases only are considered, and infectious diseases, for which normally admission is easy, are not included.

THE WARNING SYSTEM

The applications received by the service from October to March in each winter were these:

1950–51	29,741
1951–52	27,268
1952–53	38,085
1953–54	32,029
1954–55	31,403
1955–56	33,464

The upper graph of fig. 1 shows the degree of success achieved in each month of the past six winter seasons.

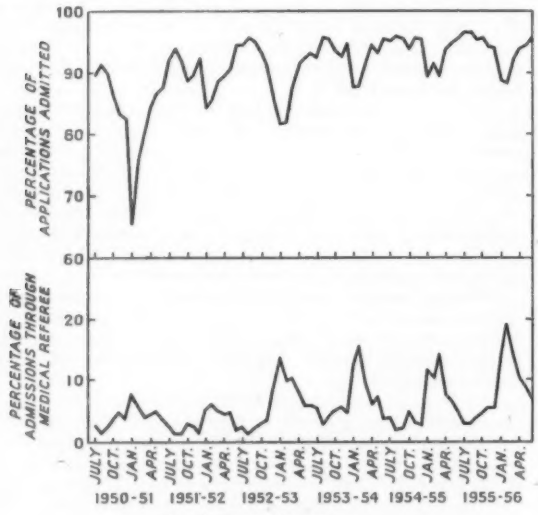

Fig. 1—General acute cases.

In January, 1951, there was a widespread influenza epidemic; for a short period E.B.S. failed to find beds for about 100 patients a day,[1] and the percentage of successful applications fell to 65·5. In consequence a warning system was evolved, and the next crisis was awaited with anxious interest. The winter of 1951–52 was uneventful, but in December, 1952, when dense fog enveloped London from 5th to 9th, an unprecedented number of applications was received.[2] The admission-rate fell for a few days to less than 80%, and the first white and yellow warnings were issued. The response to these was magnificent and that crisis passed, but after Christmas the number of applications again increased rapidly, and a white warning was issued on Jan. 5. During the next fortnight, applications remained at 1700–1800 a week (fig. 2), with an admission-rate of 80–85%. The medical referee procedure, described below, was used freely. By Jan. 21 an influenza epidemic was spreading over London and applications rose sharply to a peak on Jan. 30. A yellow warning was sent out on the 24th and a red warning on the 27th, this last indicating that, for one patient in four, no bed could be found. These signals achieved an immediate effect, but only because hospitals employed exceptional methods, such as opening extra wards, restricting admissions from the waiting-list, stopping cold surgery, and discharging patients earlier. The red warning was cancelled on Feb. 3. By March 3, when the white warning was cancelled, the second crisis was over.

The next three winter seasons may all be regarded as average (fig. 2), and the admission-rate does not in any month fall below 87·5% (fig. 1). In each of these winters January produced more applications than February, and in all but one, February more than March. It may reasonably be expected that in this coming winter, E.B.S. will receive over 30,000 applications, and that the peak will probably occur in January. It should be borne in mind that the percentages in fig. 1, upper graph, take into account all cases that fail to be admitted, even if they are withdrawn by the practitioner. On Wednesday, July 28, 1954, E.B.S. scored a possible: 90 applications were received and those 90 patients were all voluntarily accepted by hospitals. Twice since then beds have been found to meet all applications, but it remains an exceedingly rare event.

1. Abercrombie, G. F. *Lancet*, 1951, ii, 1175.
2. Abercrombie, G. F. *Ibid*, 1953, i, 234.

MEDICAL REFEREE PROCEDURE

There are, of course, varying degrees of urgency. The service works on this principle: if no bed can be found for a case, it may be submitted to the medical referee of the local hospital management committee for immediate admission. This is done through a doctor specially appointed by the regional hospital board and known as the regional medical admissions officer (R.M.A.O.).

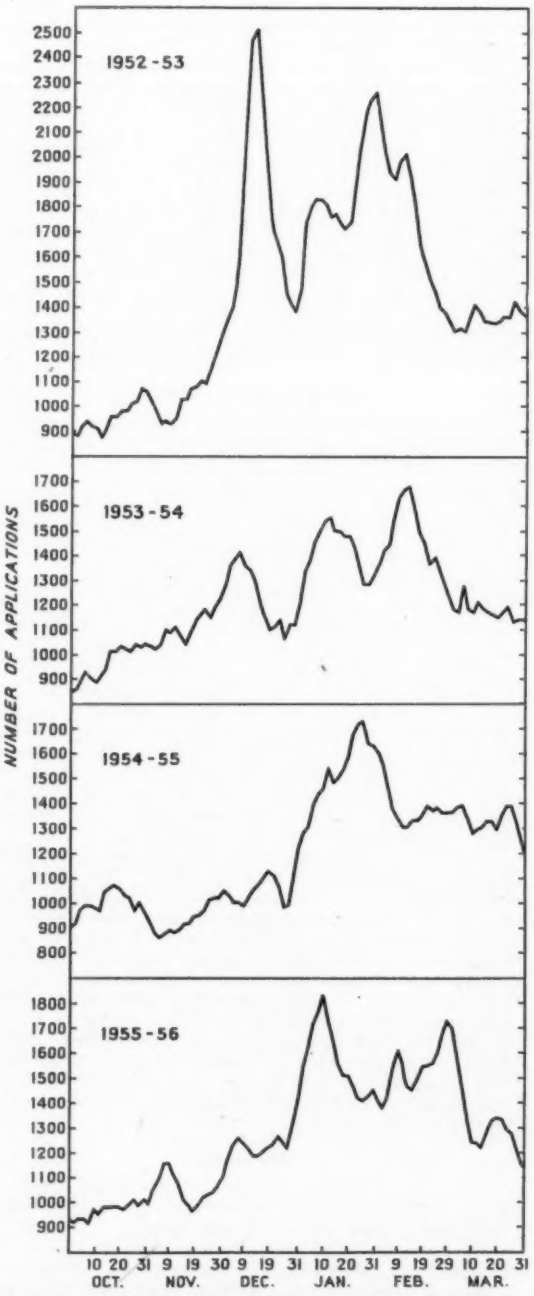

Fig. 2—Weekly totals of applications for admission of general acute cases.

In less urgent cases, when 6, 8, or even 10 hospitals have been approached and have no bed, the R.M.A.O. has a number of choices. He may find, by telephone, that the general practitioner is willing to hold the case over and to apply again next day; a domiciliary visit by a consultant may be suggested and accepted; perhaps a hospital will agree to examine a patient in the out-patient department with an undertaking, either to admit him or to start treatment, relieving the general practitioner of a responsibility which he feels he should no longer accept. But it is to be firmly stated here that every patient, represented by the R.M.A.O. as in need of urgent treatment which can *only* be obtained in hospital, does in fact go in.

This weapon—it is really the only word for it—was originally designed for use only if the illness seemed likely to be fatal, and was very sparingly used before January, 1952: but the proportion of cases then forced in, nearly 14% of all admissions, was almost twice as high as in any previous year (fig. 1, lower graph). Since that time the proportion has remained high, and in February, 1956, reached 19%. We may note that the peak of forced admissions occurs later than the peak of voluntary admissions. Study of the two graphs of fig. 1 leaves little doubt that the present warning system is unsatisfactory. It is unthinkable that, except under unpredictable conditions which may swamp the hospitals, there can ever be a return to the days of January, 1951, for in any average year the medical referee procedure will keep the admission rate above 85%.

This degree of success, however, was achieved in the first quarter of 1956 only by an amount of refereeing which is simply not acceptable. Fig. 3 shows this quarter in more detail. The three graphs are of moving weekly totals; the upper shows applications, the middle "voluntary" admissions, the lower "forced" admissions. In the week ending Feb. 29, the hospitals accepted voluntarily 1176 cases, and 326 more were forced upon them. It is not difficult to see from fig. 3 what happened. The hospitals gradually filled, and by Christmas they were nearly full; a fine response was made to the additional demands inevitable in January, but the effort was not sustained. Voluntary admissions remained at or near 1100 a week, although applications varied from 1400 to 1700. The deficit was made up largely by forced admissions.

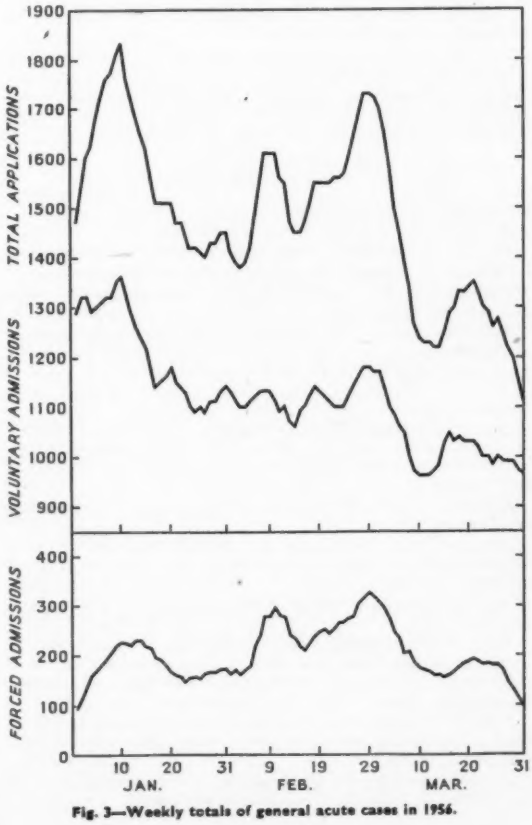

Fig. 3—Weekly totals of general acute cases in 1956.

The prospect of having to force in every fourth admission, even for a comparatively brief period in this coming winter, is most disagreeable, and over and over again a hospital is compelled to receive a patient whom it had declined an hour before.

DISCUSSION

This increasing use of the referee procedure causes very grave concern, for it inflicts hardship on the hospitals and impairs good relations between them and the service. Moreover, the constant demand for beds tends to make hospitals reluctant to accept cases from distant areas, and thus defeats one of the objects of the service, which is to spread the load evenly.

Shortage of nurses, either from lack of recruits or more often from illness, is sometimes given as a reason for refusing admission. The increased number of beds set aside for special purposes may have reduced the number left for general emergencies, and the endeavour to maintain a high occupancy-rate must also reduce the ability to take in the unexpected.

A further difficulty has been the prejudice of certain hospitals against "E.B.S. cases." There is, of course, no such thing as an E.B.S. case, as all applications originate from general practitioners. It must be remembered that E.B.S. is the general practitioner's final resource. If, for instance, he offers two patients, one aged 40, the other 80, both suffering from pneumonia, to a hospital which at that moment has only one empty bed, the younger will be admitted and the older in all probability will be refused. The general practitioner then calls the service to his aid, and if the condition of the octogenarian is such that admission is essential, he will be admitted on the order of the R.M.A.O. To some extent, therefore, E.B.S. is trying to place patients already rejected, and it may very well be that many of them cannot be discharged to their own homes, for social reasons, after recovery is complete. Hence the erroneous idea that cases received through E.B.S. are more likely to be unsuitable than those offered by the general practitioner himself. They are not unsuitable, and the truth of this is confirmed from time to time by various methods. In February, 1956, two teaching and two non-teaching hospitals were asked to give their opinion on all cases received from the service in a given period. These four hospitals saw or admitted 264 such patients, of whom only 10 in their opinion did not justify admission as emergencies. The illness was not in accordance with the diagnosis given in some of the remaining 254, but they were, nevertheless, in the opinion of the hospitals receiving them, in need of immediate admission. This is a remarkable confirmation of the clinical judgment of general practitioners.

Experience over the last few years has shown that fairly sudden increases in the demand for beds occur in January, February, or March. The exact timing, of course, varies from year to year, but their appearance seems inevitable. There is little point in a warning system which, in effect, can only say that winter has come, and excessive use of the referee system is disagreeable. I suggest that hospitals might consider a plan to free more beds for medical emergencies during the first three

months of the year, so that patients can be accepted without resort to the referee procedure.

SUMMARY

From October, 1956, to March, 1957, E.B.S. expects to receive over 30,000 applications for urgent admission. The peak will probably be in January. If last winter's experience is repeated, about 10% of these will have to be forced into hospital by the medical referee procedure. In the early months of 1957 this percentage will be considerably higher unless the hospitals, in preparation, institute a routine plan to admit many more patients with respiratory disease.

I am greatly indebted to the staff of E.B.S., and particularly to Mrs. Williams, for help in the preparation of this paper.

Public Health

LYMPHOCYTIC MENINGO-ENCEPHALITIS WITH MYALGIA AND RASH

A NEW EXANTHEM ?

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SEVERAL reports of a disease which in some ways resembles poliomyelitis have appeared recently (Ramsay and O'Sullivan 1956, Sumner 1956, Sigurdsson and Gudmundsson 1956), and the name "benign myalgic encephalomyelitis" has been suggested for it (*Lancet* 1956). In the great majority of cases there was no alteration in the cerebrospinal fluid (C.S.F.).

Cases with a similar clinical picture have been seen in the Lancashire town of Newton-le-Willows since July of this year, but the C.S.F. has been abnormal in each of the 5 cases in which it was examined. The incidence of rash seems also to be higher than in benign myalgic encephalomyelitis. A further distinguishing feature is the high morbidity-rate among families and the preponderance of minor cases. Minor forms of the disease, having such commonplace symptoms as transient headache, stiff neck, sore throat, and backache, can be recognised only when seen in a family in which there is a case of the more florid sort. In a family one characteristic example of the disorder may be accompanied by several minor cases; so presumably, in the community as a whole, the *formes frustes* greatly outnumber the classical cases. As one would expect, a few families have been affected in which no member presented the fully developed syndrome. In such cases the diagnosis could be reasonably certain only when there had been close contact with someone who had the typical disease.

The major type of illness, with its acute muscle pain and tenderness, severe headache, and signs of meningo-encephalitis, is very striking and scarcely less alarming. All 4 members of a family fell ill; the parents presented the characteristic picture, and 1 of them was admitted to hospital. The C.S.F. pressure was 200 mm. water. There were 860 cells per c.mm., mostly mononuclears, and 70 mg. of protein per 100 ml. Culture was sterile. The sugar and chloride levels were normal. Recovery was rapid.

The histories presented here have been selected because they are particularly good examples of the family outbreak, and because they demonstrate the pleomorphic nature of the disease.

Case-histories

FAMILY I—FATHER, MOTHER, TWO CHILDREN

Child, aged 4 years

July 17: conjunctival discharge, lassitude, and irritability for three days.

July 20: crying because of pain in left calf; headache later and during night; mother noticed enlarged lymph-nodes in the neck.

July 23: blotchy rash on face, eruption "like goose-pimples" on trunk; slight cough; headache and leg-pain gone.

July 25: no rash; posterior cervical, axillary, and inguinal lymph-nodes enlarged; apyrexial; no complaints.

July 29: having been apparently well for several days, awoke in the night complaining of pain in head, neck, and both legs; vomited repeatedly; marked neck stiffness and photophobia; temperature 101°F.

July 30: seemed quite well, active; good appetite; temperature 99·2°F; no tenderness or weakness; reflexes normal.

Aug. 3: slight diarrhœa; otherwise no new symptoms.

Aug. 5: well.

Mother, aged 25

July 23: aching pain in both calves, especially after walking; felt tired.

July 25: anorexia, nausea, but no limb pains.

July 26: attacks of dizziness, pain in neck, tremor of arms (especially right); pins-and-needles from shoulder to fingertips on left from time to time.

July 30: symptom-free; temperature 98°F; posterior cervical lymph-nodes enlarged.

Aug. 1: nausea and headache.

Aug. 2: pain and tenderness at back of right thigh; anorexia; malaise.

Aug. 5: felt very ill; pain, having extended to calf and buttock on right, was less severe; no headache; jerks sluggish in all limbs; areas of hyperæsthesia over dorsum of left foot and anterior aspect of right thigh; temperature 97°F.

Aug. 6: headache; pain in buttocks and thighs.

Aug. 9: much improved.

Father, aged 27

July 28: aching of lower third of right calf; overslept by six hours; both calves tender.

July 29: pain in both calves; malaise; cycling made legs very stiff for about two hours.

Aug. 5: improving steadily; feels well; legs still tender and become painful after exercise; no sensory changes; jerks normal; no sore throat, but fauces are bright-red.

FAMILY II—FATHER, MOTHER, TWO CHILDREN

Child, aged 2 years 10 months

July 18: flushed face, irritable, off food.

July 19: convulsions; blotchy rash on face for a few hours.

July 20–24: apparently well, except that he would eat little.

July 25: after a restless night seemed unable to stand, falling to floor after each attempt; appeared to resent light.

July 26: better; no physical signs apart from enlarged nodes of posterior cervical chain.

Aug. 3: well.

Mother, aged 27

July 21: aching in front of thighs for three days; marked tenderness also; headache, described as far worse than any of the attacks of migraine to which she is subject; vomiting; sore throat.

July 23: headache worse in the evenings; hyperacusis; no tinnitus.

July 24: felt wretchedly ill, vomiting frequently; very severe head pain; stiff neck; punctate rash on front of chest, abdomen, and face.

July 26: up and about, feeling much better; rapidly fatigued.

July 27: headache, vomiting, anorexia, aching pain in shoulders, upper arms, and legs, with momentary shooting pain in shins; recurring attacks of numbness in hands; during these episodes cannot appreciate touch.

July 28: pain in right forearm only, with numb feeling in hand; headache; no sensory impairment detected; tenderness of both forearms.

July 30; rash gone; food tasteless; chief complaint is of rapid onset of muscular weakness on getting up.

Aug. 22: still not well; comments on fluctuation of her state of health from day to day, particularly mentioning paræsthesiæ, headache, and muscle pains.

Child, aged 6 years

Aug. 6: refused food; looked unwell.

Aug. 10: lassitude, headache, and nausea; complained of noise, though house was fairly quiet.

Aug. 11: seemed well; temperature 99°F; posterior cervical nodes enlarged.

Aug. 13: icteric, voraciously hungry, active, apyrexial; urine contained bilirubin, urobilinogen, and albumin.

Aug. 15: spleen now palpable; lymph-nodes in axillæ and groins enlarged; urine contains bilirubin and urobilinogen but no albumin.

Aug. 19: spleen impalpable; patient seems generally well.

Aug. 22: icterus gone; urobilinogen in urine.

Aug. 25: urine normal; patient appears to have fully recovered.

FAMILY III—FATHER, MOTHER, THREE CHILDREN

Child, aged 7 years

July 22: lassitude for a week; blotchy rash of face on July 25.

July 29: frequent vomiting; frontal headache; colic; cried most of night on account of headache; left leg ached.

July 31: better; violaceous discrete macular rash on cheeks, scaling slightly, not itching; patient looks ill; temperature 99·6°F, pulse-rate 110; enlarged lymph-nodes in groin, axillæ, and posterior triangle of neck; slight neck stiffness; Lesègue's sign positive.

Aug. 2: sleeping a lot; periodic attacks of central abdominal colic; temperature 100°F.

Aug. 3: better; rash persists; temperature 99·6°F.

Aug. 6: well.

Aug. 10: no symptoms; apyrexial for the past week.

Child, aged 8 years

July 31: vomited in early morning; headache later; conjunctival injection; temperature 99·8°F.

Aug. 3: low pyrexia, but few complaints, not eating very well.

Aug. 6: apyrexial for first time.

Aug. 10: well; nodes persist in posterior cervical chain.

Mother, aged 33

Aug. 2: felt sick, vomited repeatedly; frontal headache, aching between shoulders, lower back, buttocks, thighs, and calves; muscles acutely tender; anorexia.

Aug. 3: nausea, aches and pains; tenderness of muscles, especially right calf; temperature 99·4°F, pulse-rate 96; jerks brisk.

Aug. 4: better; appetite returned; comments on abrupt onset and relief of symptoms.

Aug. 6: faint punctate rash on chest and shoulders.

Aug. 7: headache and backache for several hours.

Aug. 8: better.

Aug. 10: feels well, not fatiguing unduly quickly; temperature 98°F.

FAMILY IV—FATHER, MOTHER, TWO CHILDREN

Baby, aged 18 months

July 20: "not himself."

July 23: off food; blotchy rash on face; punctate and slightly raised pink eruption on body; drowsy in afternoon.

July 25: seems well; rash persists; temperature 97°F; posterior cervical lymph-nodes enlarged.

July 27: became irritable again and refused food.

Aug. 1: having been well for several days, again refused food; passed several loose motions; temperature 100°F.

Aug. 3: diarrhœa persists; crying a good deal; temperature 99°F; recurrence of rash on face.

Aug. 10: steady improvement over past week, but stools still rather loose.

Aug. 13: well; posterior auricular and cervical nodes enlarged.

Child, aged 6 years

July 18: sore throat.

July 23: throat improved quickly, but child has been fretful; posterior cervical lymph-nodes enlarged; temperature 101·2°F.

July 24: fine punctate rash on body; feeling well.

July 27: headache severe enough to make him cry; rash on face again; lassitude, anorexia, and slight neck stiffness.

July 29: vomiting, headache, pain in neck, and conjunctival injection.

Aug. 5: having been well for a week, complained of pain in neck again; large nodes palpable in posterior cervical chain; apyrexial.

Aug. 6: diarrhœa.

Aug. 7: felt well, but temperature 101°F; stools still loose.

Aug. 10: seems well.

Mother, aged 34

July 20: intermittent frontal headache and backache with slight dizziness for three days.

July 23: headache still; severe pain in front of left thigh; malaise.

July 26: intermittent tingling in left cheek; slight dizziness and occasional headaches; headache mostly occipital.

Aug. 3: no headache for past few days; pain in left calf after walking; no tenderness; feels well; persistent tingling in left cheek.

Aug. 5: no change.; no objective sensory signs; left knee- and ankle-jerks very brisk; right appear normal.

Aug. 6: acute pain in left pectoralis muscle; unable to raise arm, because of pain; pins-and-needles in left leg during night.

Aug. 10: better; hyperæsthesia of left hand, outer aspect of left calf, and small area of left cheek.

Aug. 13: pain in calf still; no paræsthesiæ; reflexes normal; no objective sensory findings.

Father, aged 33

July 24: felt hot; frontal headache; backache; pain in shoulders.

July 25: dizzy and weak; deaf for a short time (could not hear radio at full volume); felt extremely ill for about an hour. Shortly after this he exhibited rotatory nystagmus on deviation of the eyes, general depression of tendon-reflexes, but no detectable deafness; temperature 102°F.

July 26: feels well; irregular nystagmoid jerks only.

July 30: sudden headache: faintness on getting up; temperature 100°F; rapid fine lateral nystagmus on deviation of eyes to right; severe headache in afternoon.

Aug. 1: better but quickly tired.

Aug. 3: well.

Laboratory Investigations

The crucial matter of isolation of a causal agent from fæces and throat washings is being attempted at the Public Health Laboratory in Manchester, but this work is not yet complete. Paired sera have been examined for the presence of antibodies to influenza A and B, leptospira, lymphocytic choriomeningitis, Q fever, psittacosis, and mumps with a negative result in each case. The Paul Bunnell test has also been consistently negative.

Comment

The purpose of this paper is to draw attention to the high incidence of minor forms of a disease resembling benign myalgic encephalomyelitis.

Such cases are, of course, quite as infectious as the more seriously ill people. It seems very likely that the whole community will be affected in time, and one may be thankful that this is in most cases a mild disorder.

My thanks are due to Dr. M. O. Adams, of the Public Health Laboratory, Monsall Hospital, Manchester, for the serological examinations.

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Parliament

Capital Punishment

LAST session Mr. Sydney Silverman's Bill for the abolition of capital punishment was passed on a free vote by the Commons and thrown out by the Lords. This session it will be introduced again as a private member's Bill and if it passes the Commons a second time will, under the Parliament Act, become law. In the meantime the Government have introduced as a measure of their own the Homicide Bill which amends the law of murder and reduces, but does not abolish, the use of the death penalty. The Bill is being read a second time on Nov. 15.

The Government's Bill retains the death penalty for the following offences :

Murders in the course or furtherance of theft.

Murders by shooting or by causing an explosion.

Murders in the course of resisting arrest or of escaping from legal custody.

Murders of police officers and persons assisting them.

Murders of prison officers and persons assisting them.

Any murder where the person convicted has previously been convicted of another murder.

The sentence for other murders will be imprisonment for life.

The Bill also amends the law of murder by providing :

For the abolition of the doctrine of constructive malice.

That a person suffering from such abnormality of mind (whether arising from a condition of arrested or retarded development of mind or any inherent causes or induced by disease or injury) as substantially impaired his mental responsibility shall be liable to be convicted of manslaughter, not murder.[1]

That where there is evidence that the accused was provoked to lose his self-control, it shall be left to the jury to decide whether the provocation was enough to make a reasonable man do as he did ; if they so decide the verdict will be one of manslaughter and not of murder.

That a person who kills another in a genuine suicide pact shall be liable to be convicted of manslaughter, not murder.

The Mentally Ill

Speaking in the debate on the Queen's Speech, Dr. DONALD JOHNSON regretted the omission of any mention of the health service and especially of mental health. Here, he believed, the old-fashioned organisation inherited by the National Health Service had as yet failed to adjust itself either to modern developments or to changes in public opinion. In his view the first essential was an early change in the law relating to mental health and mental illness. He hoped that during the coming year we should have the report of the Royal Commission on this subject which had already been in session for three years.

He appreciated the many endeavours being made at present to remove the so-called stigma from the mentally ill. There had been mental health exhibitions, speeches by M.P.s, the opening of mental hospitals to visitors, and the suggestion that mental illness should be looked on in the same light as physical illness. But this kind of propaganda was wholly ineffective while we left the legal arrangements in their present state. If a man had appendicitis and refused advice to go into hospital, he was not hauled off there by policemen. Yet that was what happened if he was considered mentally ill. Again, if he went to hospital with a physical illness, he did not find himself in a locked ward, deprived of all civic rights, and wondering when and in what circumstances he would ever get out again. That, too, was what happened to many mentally ill people. If he refused an operation in hospital he was not forced to undergo it, as is the certified mental patient.

Dr. Johnson agreed that the development of the voluntary-patient system had led to voluntary mental patients making up about 75% of admissions to mental hospitals, but the fact remained that there were still some 20,000 certified patients being brought into hospital every year under various forms of compulsion. There had been no decrease in that figure over the past 25 years ; it was practically identical with that quoted in 1929. People were being certified and removed to hospital under arrangements directly inherited from the less satisfactory aspects of the Lunacy Act, 1890, which still formed the background of the whole situation in our mental hospitals, even for voluntary patients.

There was a general impression that the ease with which a man could be put into a mental hospital was equalled only by the difficulty he experienced in getting out of it again. Dr. Johnson believed that impression to be right. According to the recent Ministry of Health returns, the average mental patient going into hospital could expect to stay there 20 months before being released, either by discharge or by death. The average stay of a patient in a mental hospital was not less than four times as long as that of a tuberculous patient in a sanatorium. This was one of the reasons for overcrowding in mental hospitals. Another reason for overcrowding was lack of an adequate geriatric service. A quarter of all admissions to mental hospitals were people over 65 years of age. Dr. Johnson suggested that overcrowding was caused not only by too many admissions but also by too few discharges. He believed that by the proper rehabilitation of patients in systematic fashion and the establishment of an appropriate social service to this end, the population of our mental hospitals could be cut down by a third, if not by a half, in a very short time.

Mr. CHARLES DOUGHTY challenged the picture drawn by Dr. Johnson. In the mental hospitals he knew, the psychiatrists and mental specialists did not detain for one day longer than they could help patients who could reasonably and safely be discharged. Admittedly a large proportion of the inmates of some hospitals were elderly, and one reason for overcrowding was that, owing to the discoveries of modern medical science, patients were living longer. There was great difficulty in staffing these hospitals. It was not, as some people erroneously think, the most attractive form of nursing for anyone who has a bent for nursing, and he asked the Minister of Health to look fully into the conditions of service, pay, and work of these people.

QUESTION TIME

Prescription Charges

Mr. S. T. SWINGLER asked whether it was not a fact that diabetic patients often had to get several items on prescriptions. Must they trail down to the National Assistance Board every time to have their incomes examined ?—Miss PATRICIA HORNSBY-SMITH replied : In most cases, diabetics have comparatively long-term prescriptions which cover at least a month. The length of the prescription is entirely a matter for the medical practitioner, but the Ministry is advised that there would be no practical obstacle in the way of prescribing up to three months' supply of insulin to a coöperative patient whose treatment was stabilised.

Mr. H. A. PRICE asked what arrangements existed for the issue of composite packs to the chronic sick ?—Miss HORNSBY-SMITH : Certain composite packs are already listed in the Drug Tariff and the Minister has informed the British Medical Association that, if the medical profession consider that further composite packs for any particular condition are desirable and would be generally prescribed, he will consider, with the manufacturers, whether appropriate dispensing packs could be produced. For certain ailments this is already the practice. For example the vaporiser-set covers several items for bronchitics. Another group of items covers diabetics, and there is a dressing-set of five items in one pack which has been in use for a long time.

Poliomyelitis Vaccination

Last May and June in England and Wales 176,200 children were vaccinated against poliomyelitis, including 27,000 who received only one injection. Nearly $1\frac{1}{2}$ million children whose names were registered earlier this year will be given priority when vaccination is resumed. This should be in December for those children who have had one injection and in January for the others, but this programme will depend on the rate of supply and testing of the vaccine.

1. Under the McNaughten rules, to establish a defence of insanity, it must be proved that "at the time of the committing of the act, the party accused was labouring under such a defect of reason, from disease of the mind, as not to know the nature and quality of the act he was doing, or, if he did know it, that he did not know he was doing what was wrong."

In England Now

A Running Commentary by Peripatetic Correspondents

FLOCKING, like so many others, to the London Medical Exhibition, I was impressed by the new antibiotics and anæsthetics with romantic names, the daunting profusion of new books, and some beguiling illustrations of the kindness of detergents to the skin. But what struck me most was that there seemed to be more foods and fewer vitamin tablets than of yore. Perhaps we are shying away from synthetic modernity. I look forward to the future exhibition when camomile tea, Apicius's diet, and mandragora will once more have pride of place.

* * *

Traffic in the Metropolis was a problem to me when I arrived from the more open spaces of the North a few years ago. The problem becomes no less, but one becomes accustomed gradually to the thrusting streams of traffic around the car, although there is still a noticeable thrill when being driven by an expert.

Pedestrians experience dangers daily, but many people consider their own personal dangers to be within the category of "reasonable risk." One crosses the road with ease and security while the CROSS NOW sign is visible, or with less security using the red light, and on occasion one hurries to a traffic island as changing lights release streams of traffic which seem to fill all available space on both sides of the roadway: or one waits by a zebra crossing for a potential break in the traffic while an anxious elderly lady puts forward a foot like a bather testing the temperature of the water with her toes. In less busy places or in quieter times it is possible to cross the road without such traffic-control devices, but at the halfway mark a review of the situation to "exclude" the fast-moving vehicle is advisable.

But it is a new experience to approach the traffic problem when just discharged from hospital using one pair of crutches and minus part of one leg. Is it the same traffic? When I am merely manœuvring into position near a zebra crossing, a large lorry effectively blocks the stream while the driver indicates a clear passage, which remains embarrassingly open on the far side of the island while the bus refuses to proceed until crossing is complete. The fearsome traffic stream released by the lights slow up to allow me time to reach the side. The bus stops at the bus stop, there is time to get aboard, and somehow a seat becomes available near the door. But I wonder what will happen when I am provided with a N.H.S. artificial limb and again stand on the brink of a crossing, outwardly a normal person but in fact a novice using an unfamiliar appliance. Would a single L sign suffice, or has it to be worn as an Army shoulder-flash to be visible to drivers from both sides?

* * *

To establish my status as a peripatetic correspondent, I have been journeying daily from South London to Victoria via two or three permanent traffic jams, thirteen miles return, balanced always precariously, often illegally, and sometimes almost suicidally on two slightly irregular wheels, held in some sort of relationship by two pedals, a chain, and a progressively exfoliating frame.

The affair started with a simple puncture of rear-tyre in a cycle with a long history of recurrent punctures and arthritic creaks in all moving parts. Environmental factors doubtless played a large part, as the patient had been neglected from a very early age, but a persistent tendency for punctures to be associated with early morning returns from distant revels, when no other transport was available, made me suspicious that the machine had not only a mind of its own but views on my way of life also.

I did a routine repair and inflated. A weak spot in the tube swelled to the dimensions of a gourmand dachshund. I had seen it before and decided on expectant treatment. A loud report indicated that this was no longer necessary. I found a 5-in. slit on the lateral aspect. I carved a graft approximately 7 in. by $1\frac{1}{2}$ in. from a cadaver tube and prepared the wound edges. I coated the graft with a rubber gel and pressed it firmly into place. After a pause I inflated once more. A steady hiss and a rising of the graft showed either fulminating gas gangrene or a slipped graft. I settled for the simpler diagnosis and ripped the patch off. The wound edges gaped and curled under. I considered suture. In spite of recent work on the repair of arteries it appeared to have more snags than advantages.

It looked a grim business. I pushed two fingers along inside the tube to separate the walls, rapidly becoming adherent. I cut two more patches, slightly larger this time. One I coated with gel and manœuvred it inside the tube, approximating the edges over it. Working rapidly, I pressed the other patch over the wound. Another pause before I dabbed away the excess gel and powdered. Then I replaced the organ and closed in layers. I inflated quickly, fearing adhesions. Hardening occurred satisfactorily and everything seemed in order. I put the patient to rest for the night and retired wondering absently which saint was responsible for transport.

In the morning all was well and I set out on my journey gingerly. It passed uneventfully, but I am wondering what is the risk of recurrence. Perhaps this is why I meditate on the Four Last Things whenever travelling rapidly downhill. Does this, with a sinking feeling in the stomach, constitute a cyclo-somatic disorder?

* * *

Testimonials sometimes reveal as much about their authors as their subjects. The comment that a candidate takes a personal interest in his patients, is a keen musician or artist, or has a quick sense of humour suggests a certain kinship in these respects with his sponsor. The psychiatrist, who after all should be expert at assessing candidates, might reveal himself by some such colourful phrase as "He is a good hypomanic, obsessional personality who shows occasional paranoid trends against bureaucracy," or "This inadequate, introverted schizoid displays poverty of affect which results in negative transference with his patients, who are only distracted by his habit-spasms." Perhaps it is an orthopædic surgeon who writes "He is cheerful, practical and has plenty of common-sense. He plays for the hospital rugger XV and gets on well with the nursing staff." Probably only Dublin could produce such an unaffected tribute as "This fellow is a real sportsman. He is a gay colleague and a good judge of a horse."

What is left out of a testimonial is often as significant as what is included and on occasion one must read between the lines. The traditional comment "Whoever succeeds in getting Dr. X. to work for him will indeed be fortunate" may appear in some terser form such as "Dr. X. has had ample opportunity for original investigation and has seen a lot of work." And one might think twice about a candidate of whom it is said "The lucidity of his thoughts tends to be masked by the illegibility of his writing, but he is always prepared to offer an original opinion and to stick to it."

Of a woman candidate for a hospital appointment a referee lately wrote "She is the sort of person one would like to have with one in a tight corner." We were disappointed and even a little concerned that she did not appear for interview.

* * *

There's a good deal of fun to be had from being an anonymous peripatetic. I came across a colleague the other day who was sitting chuckling away to himself: I leaned over his shoulder and saw that he was reading my latest effort. For some reason I said nothing. Then he stood up and said: "A lot of tripe, all that stuff! Have you had your lunch?" Another friend of mine is in the know. For a time he would ask me whether a certain paragraph was mine or not, but latterly he has assumed that he knows without asking. "I saw your piece about the pigs," he will remark with pride. He is usually right, but sometimes he is wrong—and I don't always tell him when he is.

* * *

Mother-in-law, after the collision with a taxi last week, was a little worried about an unusual neurological sequel. "I hope you won't lose your no-blame clonus," she said.

* * *

Address on a circular advertising knitting-wool:

Dr. John Smith OR OCCUPIER,
St. Thomas's Hospital,
London, S.E.1.

Letters to the Editor

MEDICAL ASSOCIATION FOR THE PREVENTION OF WAR

SIR,—This association, in common with all members of the medical profession, has been deeply concerned at the events of the past two weeks. The tragic abandonment of the rule of law, and the renewal of violence in the Middle East and in Eastern Europe, have done much to destroy the gains which had been won for a saner attitude in world affairs.

Our association was formed, as its name implies, in the cause of preventing war. In view of what has occurred, we wish also to take some steps to minimise its effects. We are therefore appealing as a matter of urgency to our colleagues in the profession for contributions towards the purchase of medical supplies, which will be made available in kind to the International Red Cross for use in whichever theatre of war they are then most urgently needed.

We also urge our colleagues to support us in pressing upon all the governments concerned a return to the attitude of humanity and responsible conduct which seemed lately to be gaining acceptance among them.

Contributions should be sent to the Treasurer of the Association, Dr. A. F. Mohun, 168A, Finchley Road, London, N.W.3, and not to individual officers of the association.

LIONEL PENROSE
DAVID KERR
DUNCAN LEYS
S. FAZEKAS
PHYLLIS DOBBS
ALEX COMFORT
DOUGLAS MCCLEAN
RICHARD DOLL
RICHARD H. DOBBS
A. F. MOHUN.

NOTTINGHAM MENINGITIS

SIR,—Variants of this have been seen recently in many parts of England, but a large epidemic in upper Wensleydale had one feature in common with the Nottingham epidemic, a characteristic rash.

The Wensleydale epidemic was seen in the practices carried on by Drs. Y. M. B. Higgins and J. D. McDonald, and Drs. J. B. and K. M. D. Coltman and myself, and the M.O.H. for the district is Dr. J. L. Cotton, whose help and interest it is a pleasure to acknowledge.

It is not known how the infection reached the Dale, but it may have been imported by Easter visitors.

In a population at risk of just over 2000 there were in all 98 sufferers. The invariable symptom was headache, in some instances of great severity. In nearly all, there was a rise in temperature, the highest recorded being 105·6°F in a girl of ten. Nausea and vomiting was generally present and in 38 there were definite meningeal symptoms, i.e., neck rigidity, positive Kernig, and photophobia.

The rash was present in 32 instances. It resembled German measles, but in most it was confined to face and neck. In some patients it did spread to the trunk, but in none to the limbs.

Only 2, Dr. McDonald's patients, had lumbar puncture performed (in hospital) and the findings were said to be consistent with an aseptic meningitis.

Aysgarth, Yorkshire. WILLIAM N. PICKLES.

INDUSTRIAL REHABILITATION OF MENTAL PATIENTS

SIR,—I should like to endorse the views expressed last week by Dr. Maxwell Jones on the value of industrial rehabilitation units (I.R.U.s) in the rehabilitation of mentally ill patients.

Dr. Maxwell Jones has not, however, clearly defined the degree of recovery or otherwise in his three main categories, particularly in relation to psychotic patients. My experience as consultant psychiatrist to the I.R.U. at Egham has been that, while fully remitted psychotic patients on the whole do well, psychotic patients with residual florid symptoms—hallucinosis, delusional thought content, &c., and retardation that handicaps them in achieving anything approaching industrial pace—do not do well, often get worse, and at times require to be returned to hospital on certificate. On the other hand, the I.R.U. at Egham is residential, and it is possible that the experiments referred to, in using non-residential I.R.U.s for patients still in hospital, have achieved a more satisfactory compromise for more difficult psychotics by allowing them to return to the security of the hospital during the period of their vocational assessment and rehabilitation.

Virginia Water, Surrey. RODERICK MACDONALD.

ERADICATION OF TUBERCULOSIS

SIR,—Mortality and morbidity figures for tuberculosis suggest that in this country at least the disease is beginning to wane. Whether these changes are the result of better diagnosis or better therapy, or are due to a dying out of an epidemic, are matters of debate.

There is a danger that with the advent of prolonged chemotherapy and excisional surgical treatment we may forget that tuberculosis is a *chronic* illness and that, although treatment and observation must be continued for a long time, prevention is an even better method of control. In 1956 not only every death but every new case of tuberculosis is a great discredit to the medical services, both preventive and clinical, of our country.

The committee of the South-East Metropolitan Regional Tuberculosis Society wishes to call attention to certain aspects of tuberculosis control today which we feel have not received the attention they warrant. If the recent report of the Medical Research Council [1] on B.C.G. vaccination, and especially that part which deals with the tuberculin-state of adolescents (40% tuberculin-positive at the age of 15), is accepted, then a reorientation of the attack on tuberculosis is necessary. This attack can be made on various fronts.

Tuberculin Testing

The proportion of positive reactors in a community, especially that part under the age of 15, gives a very good indication of the success or otherwise of the various methods of prevention of tuberculosis practised. There should be a standard tuberculin test throughout the country. It should be used not only on school-leavers but on all children at school—certainly at the three major medical examinations and preferably every year. Furthermore, all children admitted to any hospital for investigation should have this standard test carried out as a routine.

Similarly those attending infant clinics should be tested annually. All children found to be tuberculin-positive should be referred to the consultant in chest medicine for chest X ray and examination. He, in conjunction with the family doctor and the school medical officer and all the ancillary public-health workers, would endeavour to track down the prime source case. A little work on these lines has been done already in this country, but as tuberculosis becomes rarer the effort expended to track down each case will have to be greater. We believe that this effort will be commensurate with the returns, but it will call for the closest coöperation and integration of all departments. In some cases, especially in rural areas, when the child has had the necessary chest X-ray examination, clinical examination may reveal evidence of tuberculous infection of the cervical or abdominal glands. Careful investigation will show that in a proportion of these cases the infection is undoubtedly milk-borne. It should be possible to speed up the complete eradication of tuberculous herds throughout the country.

B.C.G. Vaccination

What of the tuberculin-negative children? For a period of say ten or fifteen years, all these tuberculin-negative children should be offered B.C.G. vaccination at as early an age as possible. This policy would be in keeping again with

1. *Brit. med. J.* 1956, i, 413.

the findings of the Medical Research Council's investigation on B.C.G. vaccination. Certainly by the time the children leave school and go into industry there should be very few who are tuberculin-negative—unless, of course, they have reverted.

The information collected about tuberculin-positive children should be forwarded to the Ministry of Health, on a new version of form T.145, in order that the information may be used as a guide to the progress and success of the B.C.G. programme and other forms of control of tuberculosis. This information would probably be of much more real value than the present notification figures, which are open to very wide differences of interpretation in different parts of the country.

Mass Miniature Radiography

The results of M.M.R. surveys are now beginning to show diminishing returns and the whole scheme should be reviewed, especially in view of the findings of the Salford survey. When Cox, Cochrane, and Crofton [2] suggested in the medical press that there should be compulsory mass X-raying of certain sections of the community, there was a very desultory correspondence.

We suggest that all persons seen at Ministry of National Insurance examinations should have a mass-radiography film taken whatever their complaint; thus more cases of tuberculosis among chronic bronchitics and older people would be found. M.M.R. units should work much more closely with chest physicians and outpatient physicians not only in surveying small selected groups but in checking both outpatients and inpatients.

Tuberculosis can be eradicated in this country more quickly than has been thought possible; but the problem must be assessed more carefully and fully than hitherto.

Greenwich Chest Clinic, London, S.E.10. D. L. PUGH
C. W. L. JEANES.

THE TREATMENT OF DUODENAL ULCER

SIR,—Mr. Eric Farquharson's interesting article (Oct. 27) prompts comment on recurrent ulceration after partial gastrectomy for duodenal ulcer. Within the past few months five cases of stomal ulceration after Billroth-I gastrectomies have been seen and there has been occasion to operate on four of these. At operation the impression was that the new ulcer on each occasion lay on the duodenal side of the stoma. The initial resection had, in all cases, included the duodenal ulcer and in no case had the resection been "skimped."

It has been the practice in this hospital in the investigation of peptic-ulcer patients to measure in clinical units the spontaneous secretion of acid by continuous gastric suction during 12 night hours. Employing this measure of acidity it has been found that three of the cases of recurrent ulcer in this recent series had not only hyposecretion but also no free hydrochloric acid.

Few would deny that duodenal ulcer is closely linked with gastric hypersecretion, and as high secretion figures sometimes persist after partial gastrectomy for duodenal ulcer the occurrence of stomal ulceration in a proportion of these is not altogether surprising. While primary duodenal ulcer can occur in hyposecreting subjects, to find recurrent ulceration in the presence of achlorhydria is disturbing indeed and at first sight seems an even more serious indictment of partial gastrectomy than subsequent hypersecretion may be.

To explain the apparently higher incidence of recurrent ulceration after Billroth-I anastomosis recorded in recent papers it has been suggested that the duodenum is less protected against the action of gastric juice than the jejunum. That stomal ulceration can occur in the presence of achlorhydria, however, suggests that the ulceration may not be entirely related to mucosal susceptibility to acid.

May not the success of the Billroth-I operation in gastric ulcer and its relative failure, as far as the prevention of fresh ulceration is concerned, in duodenal ulcer lie partly at least in the condition of the duodenum used for the anastomosis? May it be that the remains of the duodenum in duodenal ulcer is not suitable as often as one may think for suture to the gastric remnant? This theory would also explain why added vagotomy seems to do little to reduce the stomal-ulcer recurrence-rate after Billroth anastomosis. In the best surgical hands and with the best will in the world it seems impossible to ensure that the freed duodenum distal to an ulcer, visible or healed, has no solutions of its mucosal continuity, is unscarred and fully mobile, and enjoys a perfect blood-supply and intrinsic glandular protection.

On reflection, is the indictment not of Billroth-I anastomosis rather than of partial gastrectomy per se? It would be interesting to know if any cases of jejunal stomal ulcer have occurred after partial gastrectomy in the presence of achlorhydria.

Whether an increased stomal-ulcer rate is a justifiable price to pay to avoid the possible side-effects of a Polya-type anastomosis, or whether, as Mr. Farquharson suggests, posterior gastro-enterostomy deserves a second innings, is a problem which surely now demands something in the nature of an unbiased "Royal Commission" on the surgery of peptic ulcer.

Bridge of Earn Hospital, Perthshire. A. J. M. MATHIESON.

THE EXTRA SHILLINGS

SIR,—Your leading article (Nov. 3) omits to mention what might be the cause of the Government's obviously extremely unpopular action of charging a shilling per item on each prescription.

To me it seems logical to assume that this has been taken as a means to use the patient to persuade us to limit the ever-rising cost of our prescriptions. To me again this seems fair enough; and I should suggest that the logical development would be that the patient should pay a proportion of the value of the prescription. This would rapidly produce the situation where the patient would ask if something less expensive would not be as effective; thereby taking some of the responsibility off our hands for making out the blank cheque which each prescription form represents.

St. Margaret's Bay, Kent. R. J. MELHUISH.

DANGEROUS CONTAMINANTS IN STORED BLOOD

SIR,—May I commend Dr. McEntegart's article (Nov. 3) drawing attention to this ever-present hazard, which may, perhaps, account for those unexplained transfusion tragedies in which there is no apparent incompatability between the donor and recipient.

Demonstration of infective organisms in the used bottle of blood does not prove that the blood when given was infected. If the same organisms can be recovered from post-mortem cultures from the heart and spleen, this proves that the blood when given was infected. Even this does not prove that death was due to infected blood. It is possible that case 1 may have been due to acute heart-failure from overloading of the circulation. As no necropsy was done, the cause of death remains obscure.

Most pathologists will endorse Dr. McEntegart's comment that blood-transfusion, carrying as it does a death-rate of 1 in 2000,[1] should not be lightly undertaken; the junior medical staff sometimes seem to believe that blood is a cure for all ills rather than a life-saving measure in certain conditions.

Simple precautions help to prevent disasters due to bacterial contamination of blood. Blood should never be used that has been out of the refrigerator (or refrigerator box) for more than an hour before the transfusion is set up; any sour smell or smell of sulphuretted hydrogen from the sample withdrawn should be

2. *Ibid*, p. 684.

1. Zeitlin, R. A. *Nursing Mirror*, Nov. 19, 1954.

regarded as a danger sign; a bacteriological test—the examination of a stained film—should be done as a routine on all bottles before the blood is issued. This means only a few minutes' extra work; it also means that pilot tubes are dated—the blood bottle must be tapped. Dr. McEntegart suggests that a bacteriological examination should be done if there is a doubtful reaction after a transfusion has been given; it may then be too late. Antespective is better than retrospective action.

These dangers from blood-transfusion pinpoint the importance of having all transfusion work under adequate laboratory control: small hospitals using unmatched and untested blood are today an anachronism.

Pathology Department,
Worthing Hospital. R. AIDIN.

ADVERTISEMENTS FOR DRUGS

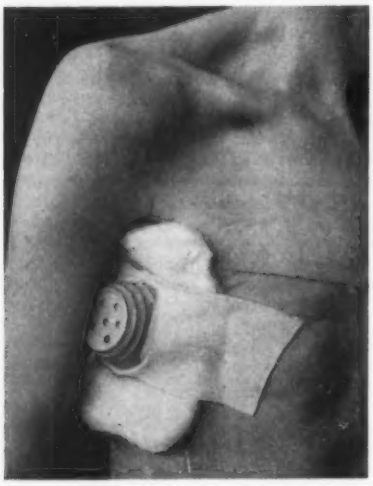
SIR,—What's given shines, what's received is rusty: is not Dr. W. J. Walkden, in his letter last week, rather hard on the drug firms and their representatives? He says the literature they send out is produced for those unprepared to read, or to think. I would say it often lands in the hands of those unprepared to learn. The beauty of medicine is that one never learns out, and I, for one, have learned a good deal from their literature, and from their representatives.

Wyke House,
Isleworth, Middlesex. H. PULLAR-STRECKER.

FAILED PNEUMONECTOMY?

SIR,—When a patient with pulmonary tuberculosis accepts pneumonectomy he accepts the risk of a "kill or cure" operation rather than gradual death from chronic disease. He does not bargain for ending up with a chronic empyema and bronchopleural fistula requiring tube drainage for months, years, or even the rest of his life. This is also a nightmare for the surgeon because he has to face an unhappy disgruntled patient at regular intervals to change his tube. I have recently been shown, by an ingenious patient who refuses to be an invalid, that one can live happily with a tube in the chest and the minimum of discomfort.

He bought from Woolworth's a plastic cup which measured $1^{5}/_{8}$ in. in diameter at the base, $3^{1}/_{8}$ in. in diameter at the open end, and $1^{1}/_{2}$ in. deep. Five holes were bored in the base with a $^{3}/_{16}$-in. drill to provide ventilation. A piece of cotton-wool with a circular hole cut in it about $2^{1}/_{2}$ in. in diameter (smaller than the diameter of the open end of the cup) is laid on the chest so that the tube projects through the hole in the cotton-wool. A piece of gauze two layers thick (thin enough to let air through and yet thick enough to absorb discharge) is placed in the cup, which is inverted over the cotton-wool and tube, and strapped in position with a piece of 'Elastoplast' similar in shape to the cotton-wool (see figure). The dressing is changed daily, or as often as required. This takes ten minutes. The cup can be boiled.



The patient states that the apparatus has made him wonderfully comfortable. He can sleep on the side bearing the tube and wear his clothes without discomfort. He could, if necessary, live with the tube for the rest of his life, and is at present working full-time driving a 10-cwt. van.

Harrow. NIGEL RIVERS.

TRIAZOL IN SCHIZOPHRENIA

SIR,—It is now almost forgotten that "triazol" (cyclohexyl-ethyl-triazol) was the last of the chemical convulsants to be introduced prior to electroconvulsion therapy (see Mayer-Gross and Walk[1]). It was a definite improvement on its predecessor, cardiazol, because it could be given with a small needle, because the dose could be gauged by the patient's reaction, and because it did not cause thrombosis of the veins to the same extent. The clinical results were as good as could be expected in schizophrenia, giving a recovery-rate of about 30% in certified cases, as against a normal 10% recovery in untreated cases.[2] The use of E.C.T. in schizophrenia, however, was generally accepted as disappointing, and most mental hospitals now use insulin shock instead, together with tranquillisers such as chlorpromazine and reserpine. At this hospital I am using triazol on schizophrenics who have failed to respond to these other forms of treatment and the results have so far been remarkably good.

The present makers of triazol ('Hexazole,' Boots) inform me that they are using very little of this product elsewhere. It would be a pity if such a valuable remedy fell into disuse without ever having a fair clinical trial on a large scale.

Lancaster Moor Hospital,
Lancaster. R. PAKENHAM-WALSH.

TETANUS

SIR,—In your issue of Sept. 15 I was particularly interested in the two articles about tetanus. We have to thank the authors in London and Oxford for their very instructive case-reports. The article on puerperal tetanus, however, contains one or two general statements and references which in my opinion call for further comment.

Dr. Ramsay, Dr. France, and Dr. Dempsey state that "puerperal tetanus is extremely rare"; that "it is generally agreed that puerperal tetanus carries a particularly grave prognosis"; and that "tetanus complicating abortion and pregnancy is rare and hitherto usually fatal." Adams and Morton are quoted as considering puerperal tetanus the most dangerous of all forms of tetanus, with a mortality-rate of 75–100%. These are opinions which are generally accepted, and which I never questioned before working in India. I have found, however, that tetanus is common, and puerperal tetanus not uncommon in this district of India, where the methods employed by village midwives favour such infection. Moreover, though every case of puerperal tetanus has been accepted with grave misgivings about the prognosis, not all have proved fatal.

It is hoped to publish soon an analysis of 77 cases of tetanus treated mainly in the small 90-bed Irish Presbyterian Mission Hospital, Borsad. This analysis includes 60 admitted since March, 1954, when I entered mission hospital practice. Of these 60 cases 4 were puerperal (including 1 after abortion) and in 2 of the 4 the patients recovered. Dr. Meyer and Dr. Hughes tell me that they had cures in 3 consecutive cases of puerperal tetanus in the I.P. Mission Hospital Surendranagar, in the space of a few months. They and I have been agreeably surprised to find such a high proportion of cures.

Dr. Ramsay and his colleagues cite Weinstein and Beacham as considering the improvement in mortality-

1. Mayer-Gross, W., Walk, A. *Lancet*, 1938, i, 1324.
2. Lancaster Moor Hospital statistics.

rate in their cases to be due to the more widespread use of tetanus antitoxin. It is not clear what dosage these writers had in mind, but in my experience a high dose of tetanus antitoxin is not the most important factor in the treatment of tetanus. Batten [1] says that the therapeutic value of antitetanic serum is uncertain, and that experimental and clinical evidence of its toxin-neutralising effect is lacking.

Two years ago the standard dose of tetanus antitoxin used in the Borsad Hospital was reduced from 100,000 I.U. (1950) to 20,000 I.U. (1950). The cure-rate for 25 consecutive cases treated with 100,000 I.U. was 40%, while that for 37 cases treated with 20,000 I.U. was 51%. Other treatment was the same for both these groups. Since then 12 of the last 15 cases of tetanus treated with 20,000 I.U. have been cured. As the other treatment was not the same in some of these most recent cases, this group cannot be compared directly with the others, but the results do not suggest that the small dose of antitoxin has been any less effective than the large dose.

A fuller discussion of how the dosage came to be reduced, and of antitoxin therapy in general, will be found in the analysis of the Borsad series which is to appear in the January or March number of the *Journal of the Christian Medical Association of India*. I would thank the Editor for permission to quote some of the above figures.

Irish Presbyterian Mission Hospital, Anand, India. WILLIAM A. HANNA.

WALKING-AIDS

SIR,—The infantile cerebral palsies are defects of voluntary movement; the children who show these disturbances have signs from which we deduce that they have structural brain defects—which are permanent. The activity of remaining (and maturing) structures is, however, responsive to environmental influences, and infantile cerebral palsy thus is not a static condition. Children of sufficient intelligence learn to walk well if they are properly guided during the process. Children too mentally defective to learn can neither learn to walk nor to use purposefully a walking-aid. Perhaps Dr. Piper's small group of children with cerebral palsies falls into this category.

Cerebral Palsy Unit, Queen Mary's Hospital for Children, Carshalton. EIRENE COLLIS.

Charing Cross Hospital, London, W.C.2. WILLIAM DUNHAM.

"BILIRUBIN" AND "CONJUGATED BILIRUBIN"

SIR,—I have only just had an opportunity of seeing Dr. G. H. Lathe's letter (Sept. 29) suggesting abandonment of the terms "direct" and "indirect" bilirubin.

When any change of established terminology is contemplated, the lesson of anatomy should not be overlooked. In my own student days we were taught anatomy in what we called the "new terminology": when I reached the wards, I found that the surgeons used the "old terminology," and I well remember my difficulties.

The matter affects, primarily, clinical pathologists because the matter will probably be decided by the terminology used by them in their reports. In any case, workers in non-teaching hospitals are entitled to be heard in the matter. I believe matters of terminology to be proper matters for specialist societies to consider, and I suggest that Dr. Lathe lay his suggestion before the Association of Clinical Pathologists, which is well equipped to consider it.

In spite of Dr. Lathe's letter I am still not clear why a damaged liver produces "conjugated bilirubin" in infective hepatitis.

Department of Chemical Pathology, United Sheffield Hospitals. ARTHUR JORDAN.

1. Batten, R. *Lancet*, 1956, i, 231.

THE GREATER MEDICAL PROFESSION

SIR,—All who take part in the treatment of the sick are working towards a common goal, and I agree with Dr. Fox (Oct. 13) that we should encourage all those members of the medical team who have not already done so to form themselves into professional bodies, conforming to professional standards; and when they are fully trained we should accept them as colleagues. By so doing all would be on their mettle to accept one standard: "The patient comes first."

There is, I believe, no risk that the doctor would thus become "just one expert among many." Does the general commanding an army become "just one expert among many" when he calls in his technical advisers to assist him in carrying out his plan? It is *he*, not they, who is responsible for the successful conduct of the campaign; and the same is true of the doctor, who sees the patient first and is responsible for deciding on a plan of action on which life itself may depend. This is something quite different from being chairman of a committee of experts. But it also presupposes that the doctor—the man who holds the patient's confidence and trust—is highly skilled and respected by all, "a leader of men."

Though her training may be long, and her examinations increasingly difficult, the nurse is not a member of the medical profession. The qualities of a good nurse are compassion, sympathy, understanding, and a capacity to see the position through the patient's eyes and by her conduct of the case obtain that confidence from the patient which is essential for success. If she has these qualities she will be loved and revered by all: without them no amount of learning and examinations will ever make her into a good nurse, or even a worthy member of the medical team.

We are told that some almoners regard their profession as a sister rather than a daughter of ours. If that is so, how is it that the almoner receives her "appreciation of the situation" from the doctor? Would she, indeed, have anything to do at all if cases were not sent to her? Surely it must be the doctor who leads the team, calling in the almoner, among others, to help him solve the problem presented to him—the welfare of the patient.

In a long and varied life during which it has been my privilege to have had many members of the medical team working under my administration, I have always found that the "arrogance" of partial knowledge (one branch of the medical art only) can be overcome by any doctor who takes the trouble to explain carefully what he wants done and why he wants it done.

I quite agree with Mr. Trillwood (Oct. 27) in his closing remarks. If by default or design the doctor is made of such poor stuff that he is unwilling or unable to accept his rightful position of command, then indeed it will be a sorry day for the future of the Greater Medical Profession, which could quite easily dissolve into anarchy.

Worthing. HAROLD LEESON.

SIR,—Mr. Trillwood appears to be unaware of the generally accepted definition of a medical auxiliary. The latter term is usually applied to those who do not have a full-time course of academic training and do not have full professional responsibility for their work.

Dr. Fox, in mentioning several distinguished medical scientists without clinical qualifications, was obviously considering a much wider field than the narrow one of the hospital from which Mr. Trillwood took his illustrations.

As Dr. Fox stated, many of the advances in medical knowledge now come from those not in the ordinary way accepted as members of the medical profession. This is particularly so in the field of pharmacology and therapeutics. For example, most new drugs are now introduced from the research laboratories of pharmaceutical manufacturing firms. Every important antibiotic since penicillin has been discovered in such

laboratories—one by a distinguished British pharmacist-pharmacologist. Much of this work is carried out by chemists, non-medical bacteriologists, pharmacologists, and pharmacists. These scientists are doing independent, original work of the highest importance. Would Mr. Trillwood consider them as medical auxiliaries? Pharmacists carry out much research into the stability and formulation of medicaments, as exemplified by the brilliant work of the Danish pharmacist, Dr. Hallas-Møller, who introduced the insulin zinc suspensions. Little or none of this work is done under medical supervision.

Even in the narrow hospital field Mr. Trillwood's observations are misleading. The hospital pharmacy is, or should be, an independent department, professionally responsible only to the appropriate governing body. It is only in dispensing that the pharmacist receives an order from the doctor; and then, as Mr. Trillwood has mentioned, the prescriber has very often to rely on the pharmacist for the preparation of the drug in a suitable form. Faulty formulation can render the most potent drugs completely inert. Thus the pharmacist cannot be said to be working under medical supervision. Furthermore, dispensing is not by any means the sole, or even the most important, function of the pharmacist. Much original pharmaceutical research has been done by hospital pharmacists, some of it of fundamental importance, such as the first isolation of several alkaloids including pilocarpine. Several important methods of medication, such as the sublingual tablet and crushable glass capsule, were invented by hospital pharmacists.

It appears that Mr. Trillwood has fallen into the common error of identifying the functions of the pharmacist with those of the dispenser. We are accustomed to this error from members of the public, and even from less well-informed hospital personnel, but it is sad to see the chief pharmacist of a teaching hospital supporting this misconception. It is this attitude which is responsible for the salaries of hospital pharmacists being less than those of other branches of the profession and for the fact that pharmacists do not receive Army rank appropriate to their qualifications.

Pharmacy has never been an ancillary of medicine.

In the earliest days there was practically no distinction between the two professions. In several countries there are official edicts establishing medicine and pharmacy as separate, independent professions of equal status, as that of the Holy Roman Emperor Frederick II in 1240; a similar decree was issued by Philip IV of Spain in 1650. The issue in England was complicated by the fact that the original practitioners of pharmacy, the apothecaries, gradually transferred from pharmacy into medicine, being finally confirmed as medical practitioners by the Apothecaries' Act of 1815.

Thus pharmacy has played an important part in the development of British medicine. Because of the change of the apothecaries from pharmacy to medicine the organisation of British pharmacy virtually had to start over again with the foundation of the Pharmaceutical Society in 1841. This society is entirely independent from medicine and has its own examining, registration, and disciplinary powers.

London University recognises pharmacy as a branch of medicine in awarding the degrees of bachelor and master of pharmacy in the faculty of medicine, and in allowing graduate pharmacists to proceed to the degree of doctor of philosophy in medicine (non-clinical). Many pharmacists now have such degrees. The minimum time for qualification for a pharmacist is now a three-year full-time college course with either a two-year undergraduate or one-year postgraduate studentship. The dispenser, on the other hand, may have no certificate at all or may have taken a short course (possibly part-time) for the Society of Apothecaries' assistants in dispensing certificate. The latter are, therefore, the pharmaceutical equivalent of the medical auxiliary.

I am sure that the great majority of pharmacists will join with me in repudiating Mr. Trillwood's suggestion of accepting the classification of pharmacists as medical auxiliaries.

T. D. WHITTET
Chief Pharmacist and Lecturer in Pharmacy.

University College Hospital, London, W.C.1.

A DENTAL CENTENARY

SIR,—One hundred years ago this month was formed the Odontological Society of London, the first professional organisation of dentistry in the country. In 1907 it joined with fourteen other societies to form the Royal Society of Medicine, of which it became the Section of Odontology.

The first general meeting of the Odontological Society was held on Jan. 5, 1857, and it is proposed to celebrate this event by a dinner to be held at the Royal College of Surgeons on Friday, Jan. 4, 1957.

The cost of the dinner is £2, inclusive of wines at the table. Wives and other guests will be welcome. Applications, accompanied by the appropriate cheque, should be sent to the Hon. Secretary, Section of Odontology, Royal Society of Medicine, 1, Wimpole Street, W.1.

JAMES A. S. WRIGHT
President,
Section of Odontology,
Royal Society of Medicine.

London, W.1.

ADVERTISING CONSULTANT POSTS

SIR,—Senior registrars often wait many years before receiving a consultant appointment, in which post they will spend the rest of their professional life. The decision to apply for a consultant job is, therefore, a matter which requires a great deal of careful thought and investigation. It is disturbing that some regional hospital boards allow only two or three weeks in which candidates may submit applications. Surely, this haste is unfair and quite unnecessary. Dates of retirement are known months in advance, and deferring new appointments for three months can cause no harm. The application period should be at least six weeks and preferably longer.

At present a registrar may go for a holiday abroad during his leave and return to find himself too late to apply for a post which was not even advertised before he left. Or one of his chiefs may be on holiday at the time when he wishes to ask his advice and request him to be a referee, before sending in an application.

C. D. CALNAN.

London, W.1.

CORTISONE IN ASTHMA

SIR,—The two M.R.C. reports (Oct. 20) on the effect of cortisone in bronchial asthma and in status asthmaticus require some comment. The trials were arranged by the same subcommittee, but the reports are published separately, although they deal with different stages of one and the same disease. The conclusion is drawn that in chronic asthma cortisone is probably somewhat better than a placebo during the first 8 weeks of treatment, but not later, whereas in status asthmaticus cortisone acts favourably. It is odd that cortisone thus would appear to act less favourably in the less severe stage of the same disease. The reports do not comment on this curious difference. In the interest of many severe asthmatics it is important that no erroneous impression should be created by these trials.

I suggest that the difference in the results of the two trials is due to serious faults in the design of the trial with chronic asthma. These faults are:

(*a*) *Unsuitable selection of patients*, permitting the inclusion of asthmatics with a history as short as 3 months and of others who had recently had complete remissions of the disease. In my experience, such patients show the most unpredictable variations in their condition. Only patients with a much longer and continuous history of asthma should have been included. Such patients are not rare.

(*b*) *Inadequate dosage during the first week of treatment.*—On the 4th day of treatment the dosage dropped abruptly from 200 to 100 mg. This early drop to the maintenance dosage or, in some cases, even below it would seriously interfere with the improvement expected towards the end of the first week. In my experience, a much more gradual decrease in the dosage is necessary. This error, and the one mentioned under (*a*), has fortunately been avoided in the trial with status asthmaticus.

(c) *Inadequate assessment of results.*—The presence or the amount of rhonchi is such a haphazard guide to the severity of the condition that no reliance can be placed upon it. Instead, more attention should have been paid to respiratory function. The vital capacity was measured only at the beginning and at the end of the half-year of the trial. As numerous investigators [1–3] have previously found a sharp increase with cortisone treatment, this measurement should have been made every week. In addition, accurate records should have been kept of the amount of anti-asthmatic drugs used by the patients during the various stages of the trial. These often are a quite characteristic guide to the severity of the condition.

Even despite these shortcomings the results show that the cortisone patients, during the first 8 weeks, significantly improved in comparison with the controls. This improvement was maintained almost to the end of the trial, when the dosage of cortisone must have been far below the maintenance level. The report, however, while admitting initial improvement, stresses the fact that the control group also improved, although only during the second half of the trial. During this second half, therefore, there was no significant difference between the cortisone and the control group. The report does not discuss the reasons for this spontaneous improvement in the controls and leaves the reader with the impression that in chronic asthma cortisone only produces a just significant and very transient improvement. I cannot see why the results should have been presented in this distorted way. The trial has no doubt shown a sustained though not very dramatic improvement by cortisone. The lack of any dramatic response can be satisfactorily explained by the faulty design of the trial; these faults were absent in the status asthmaticus trial, and the report should at least have discussed the contradictory results of the two trials. Is it right to avoid this issue by publishing two separate reports, as if the two conditions were two quite different diseases?

Incidentally, use might have been made of the typical pattern of cortisone action in asthma. The first subjective signs of the cortisone effect appear only after 24–48 hours and the objective improvement reaches its peak between 72 and 96 hours.[1 2 4 13] It is difficult to imagine that placebo reactors can successfully imitate this typical pattern, and it could have been used to exclude them. It might thus have been possible to avoid the necessity of treating severe asthmatics with placebos. The subcommittee have been lucky that the 5 patients of their control group who went into asthmatic state on a placebo did not suffer greater harm.

Finally, Sir, I must express doubts as to whether these trials were really necessary. Cortisone has been given in asthma for the last 8 years, and the numerous reports which have appeared in a steady stream since 1949 have recognised its beneficial effects with rare unanimity.[1–24] The report cites only three papers, two of which have appeared during the trial. Was the subcommittee aware of this overwhelming evidence?

London, N.3. H. HERXHEIMER.

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CLINICOSIS

SIR,—In future, the Widdicombe File will be in the forefront of my Saturday reading.

No doubt many of your readers are enjoying the interesting discussion, but no-one so far has contributed so much constructive thought as has Dr. John Fry (Nov. 3). Praise be to *The Lancet* that someone can call us consultants even if it be non-clinical, as indeed we are, and even if it be unpaid, as alack we most certainly are. It is a beginning.

Dr. Fry's scheme is, in short, for an increase of coördination, education, and remuneration (all round). No-one would quarrel with the last suggestion, and I know that in this area some doctors have pædiatric morning or afternoon surgeries and that there is a high level of interest, care, and skill in pædiatrics and obstetrics.

In the near future, the work of the family doctor is going to increase enormously in the immunisation service if he is to participate in inoculations against poliomyelitis and possibly other diseases. These inoculations may have to be carried out at times when he is otherwise very busy. Granted that this difficulty is overcome, and that school-medical and clinic examinations could be postponed, not indefinitely, but a week or so, what sort of a disorganisation in schools and clinics are we going to achieve? Are we not reducing the family doctor's list only to give him too great a variety of services? So far the clinics and routine school examinations have, as a side-effect, provided a safety valve against such dangers.

Another matter of great concern is whether or not there is to be a pædiatric list similar to the obstetric list. The blueprints included one, but then what are we to do about the practice in which one partner prefers the care of the aged and the other mental health, and the assistant does a bit of everything? Is this going to be called satisfactory child care? Are we to have a "minimum" of child patients before acceptance to the list?

I merely highlight a few of the difficulties to show Dr. Fry that others have been giving to these problems detailed thought to provide for an equitable solution for the three important factions which are not the three services, but the patient (child), the family doctor, and the public-health worker.

L. R. L. EDWARDS
Medical officer of health.

Beckenham, Kent.

SIR,—As a family doctor may I make some comments on local-authority clinics?

The late Sir James Spence and others found in Newcastle upon Tyne [1] that:

(*a*) 30% of mothers did not take their infants to these clinics at all.

(*b*) 25% took their infants three times or less.

(*c*) About 50% of infants were taken more than three times in the first year.

(*d*) 20% were taken regularly in the first year.

(*e*) 10% were taken regularly in the first 6 months.

The summary of the chapter concludes: "We do not know why the mothers stop attending and suggest a further inquiry be undertaken."

Now Dr. Gordon states (Oct. 27) that (*a*) the ideal type of family doctor is the one who does this type of work, and (*b*) if the local authority did not do it 90% of it would not get done. The above summary is sufficient refutation to (*b*). Concerning (*a*), perhaps one's experience in this respect is pertinent.

I run a rapidly growing practice in a development area, where 1 in 25 on the list is pregnant. I do my own ante- and post-natal care, by appointment, one afternoon a week, and the midwives come along.

I have made repeated attempts to have the health visitor present at my infant-welfare clinics which are run on the same lines,[2] and also to have the facility of issuing cheap milk—with no response from the M.O.H. Moreover there have

1. A Thousand Families in Newcastle upon Tyne. London, 1954; p. 166.
2. An Inquiry into Health Visiting. H.M. Stationery Office, 1956; p. 123.

been reports from patients being advised to go to the clinic (L.H.A.) in spite of my having made it quite plain to the local health authority that I run my own. One wonders where the ethics of restrictive practice and advertising begin and end.

To be fair, one must add that in respect to problem families the health visitor is of inestimable value.

I have found that if one takes the trouble to tell expectant mothers that an infant-welfare clinic is run on the same lines as the antenatal clinic, without exception they welcome the opportunity of bringing their infants and children, and I anticipate my figures of attendance to be between 90 and 100%. It is at these clinics that a unique opportunity presents itself for teaching the principles of mental health and the prevention of accidents in the home, besides the routine work (feeding, &c.).

The answer to the whole question lies to a great degree in the G.P.'s own hands, and, as I heard Dr. Lindsay Batten say at a postgraduate course at Great Ormond Street last year, "Be present at the birth" to sustain the family-doctor/patient relationship created during pregnancy. This relationship no clinic doctor possesses or can possess as it stems from the continuous care of the patient—and here the operative word is "continuous."

Swindon. D. L. REES-JONES.

SIR,—Having had experience of both welfare clinics and general practice, I can confirm "Dr. Richard Cobbleigh's" criticisms.

It is bad for a pregnant woman or for a mother —particularly a first-timer—to have a multiplicity of professional advisers. As the doctor responsible for the health of the family, I do not want my patients to go to another doctor for welfare advice. I do not want to be put into the position of saying that I disagree with another doctor, and that therefore one of us is wrong. I do not want my patient's confidence in me undermined, and I do not want to spend unnecessary time in trying to explain away differences of medical opinion. We have all seen the unhappy results when this conflict exists —the failure of breast-feeding, the torn prepuce, the frightened primigravida, and so on.

In an attempt to avoid this confusion, I offer a clinic on one afternoon a week. However, I find that not all my mothers come to this; some prefer to go to the local-authority clinic. I have not investigated why, but I imagine that the factors operating are: (1) propaganda by health visitors; (2) the attraction of orange-juice and cheap baby-foods; (3) the desire to go to the clinic with friends who are not on the same doctor's list; (4) the convenience of the rival clinic (particularly geographical); (5) the opportunity for an easily available second opinion; and (6) the opportunity for those mothers who enjoy "welfarism" as they enjoy ill health.

I think that the solution lies in the G.P. providing a welfare, educational, and sickness service, and providing it as the head of the domiciliary-medicine team of doctors, midwives, health visitors, and district nurses.

However, to replan the service, we first need figures on which to base our opinions:

1. How many family doctors already provide welfare services at their surgery, and what is their list of patients?
2. What percentage of the appropriate patients attend these clinics?
3. What are the reasons for some patients preferring a local-authority welfare clinic?
4. What are the opinions of the nurses, midwives, and health visitors?
5. How many doctors would provide this service if they were paid, say, a sessional fee.

These inquiries could perhaps be the subject of a survey by the College of General Practitioners. The present arrangements are unsatisfactory, and an investigation should be undertaken to establish an improvement. Dr. Cobbleigh will deserve the thanks of all doctors if he has started the ball rolling.

London, S.E.26. R. N. JACKSON.

OMISSION OF PRESCRIBED P.A.S.

SIR,—The article by Dr. Penman and Dr. Wraith (Sept. 15) and subsequent correspondence has drawn attention to the difficulty of getting some patients to take their *p*-aminosalicylic acid (P.A.S.), because of its unpleasant taste. I find that the majority of my patients tolerate very well the following prescription:

Sodium P.A.S. 5 g.
Mist. mag. trisil. *N.F.* ad 1 oz.

So far I have had no failures.

William Budd Health Centre, Bristol. H. I. HOWARD.

HERPES OPHTHALMICUS

SIR,—The type of case described by Dr. Fison (Oct. 20) certainly appears from time to time in general-hospital wards, especially in older patients. Only a few weeks ago I was asked to see the following case.

A man, aged 72, with no previous history of varicella, was admitted on Sept. 10 with a fractured mandible. Fourteen days later he developed a mild zoster involving the ophthalmic division of the right trigeminal nerve which fortunately spared the nasociliary branch. Two days later a generalised vesicular eruption appeared, mainly on the trunk and limbs; the vesicles, some of which were hæmorrhagic, were surrounded by a ring of erythema. Antibiotics, as in Dr. Fison's case, did not materially alter the course of the disease, which left the usual tell-tale scars.

A patient, aged 29, in the adjacent bed who was admitted on the same day, also with a fractured mandible, was discharged after 22 days in hospital and failed to keep his outpatient appointment. On subsequent inquiry he was found to have developed a generalised vesicular eruption 10 days after discharge, which was diagnosed as chickenpox. He, too, had no previous history.

As Dr. Librach mentions (Nov. 3), the viruses of zoster and varicella are either the same or indistinguishable. The virus may well have both neurotropic and dermatotropic properties; hence the problem of differentiating between zoster generalisata and a combination of zoster and varicella. Surely they are different manifestations of the same virus, as illustrated by the above case.

Manchester. IAN A. KELLOCK.

ROYAL COLLEGE OF SURGEONS

SIR,—We wish to call the special attention of all members and fellows of the Royal College of Surgeons of England to the annual general meeting to be held at the college in Lincoln's Inn Fields on Wednesday, Dec. 12.

The nature of this meeting has been recently revised and a programme arranged which should prove attractive to general practitioners and surgeons alike.

About 30 scientific exhibits by members and fellows illustrating aspects of medicine and surgery and the work of the departments of anatomy, pathology, physiology, and pharmacology in the college will be on view from 10 A.M. At 11 o'clock in the Great Hall (accommodating some 700) there will be a series of scientific cinematograph films. At 1 P.M. lunch will be available in the college, and at 2 P.M. there will be a ceremony of admission to the honorary fellowship followed by a Moynihan lecture by Prof. I. S. Ravdin, professor of surgery in Philadelphia and chairman of the Board of Regents of the American College of Surgeons.

The annual meeting of fellows and members at 4 o'clock will include a résumé of college matters and afford members and fellows the opportunity to discuss matters of general interest and to make recommendations to council.

Tea at 5 P.M. will be provided and the day will end with a subscription dinner (informal dress) at 7 for 7.30 to which guests may be brought. Applications for tickets, £1 10s.

each, accompanied by a cheque, must be sent to the deputy secretary at least a week in advance.

All general practitioners and specialists will be made very welcome and are assured of a profitable and friendly day.

A. LAWRENCE ABEL
RUSSELL BROCK
Vice-Presidents, Royal College of Surgeons of England.

Lincoln's Inn Fields, London, W.C.2.

Medicine and the Law

A Question of Copyright

THE plaintiff was the medical superintendent, and the defendant was superintending physiotherapist, at a hospital specialising in the treatment of poliomyelitis. The defendant prepared for the use of the plaintiff, who was writing a book, notes on the physiotherapeutic aspect of her experience in the treatment of poliomyelitis patients. In 1949 the defendant left and took up a similar appointment at another hospital. During 1950 she began to write a thesis. The plaintiff completed the first text of his book by June, 1951. Towards the end of 1952 the defendant completed her thesis, *Clinical Observations on the Treatment of Poliomyelitis*, and in 1953 submitted it to the Chartered Society of Physiotherapists, and was awarded a fellowship. In July, 1955, the plaintiff's book, *Poliomyelitis and Polioencephalitis*, was published. In August the defendant, who was preparing her thesis for publication, visited her publishers with a copy of the plaintiff's book which had been sent to her and complained that many passages from it were taken from her thesis. Thereupon her publishers, in her presence, telephoned to the plaintiff's publishers and repeated the complaint. The plaintiff now sued the defendant for, inter alia, damages for slander of title and a declaration that he was the owner of the copyright in the book. The defendant counterclaimed against the plaintiff and his publishers for, inter alia, an injunction restraining them from infringing her copyright.

Mr. Justice GLYN-JONES said that the defendant must accept responsibility for the publication over the telephone to the plaintiff's publishers since it was made in her presence and the inference was that it was made with her consent and approval; her publishers were, therefore, her agents in that respect. A comparison of the thesis and the book showed that many long passages were in much the same, or identical, terms. The parties were on affectionate terms, and, on the evidence, certain parts of the book, in particular a section relating to muscular re-education, were the work of the defendant which she had written for the plaintiff to incorporate in his book. There had been collaboration between the parties after the defendant had left the hospital, and later alterations made by the plaintiff to his text were copied from a draft of the thesis, but, on the whole of the evidence and having regard to the relationship between the parties, his Lordship found as a fact that the defendant, either expressly or by inference from her conduct, had consented to the plaintiff using from time to time over the years material supplied by her; nothing had happened to inform the plaintiff that he might no longer do so, and the defendant had not by words or conduct brought that consent to an end. There was, therefore, no breach by the plaintiff of her copyright of which she could complain.

The parties had originally collaborated and it was impossible to say which parts of the book had been written by the defendant and which by the plaintiff. It being impossible to divide the book up, his Lordship found that in law the plaintiff and defendant were joint owners of the copyright in the book. As to the thesis it might be that the defendant had taken advantage of what she remembered of the plaintiff's book so far as collateral matters were concerned, but in substance it was her own work and she was entitled to the credit for it; it was written from the point of view of a physiotherapist and intended to help physiotherapists and members of the medical profession interested in the care and treatment of poliomyelitis, and everything in it from that point of view was drawn from her own experience, knowledge, and reading. Nothing in the case detracted from the favourable view of her competence and fitness which an examiner reading the thesis might have formed.

After a consultation between his Lordship and counsel it was announced that, in view of his Lordship's findings of fact, the defendant had agreed to submit to an order dismissing her counterclaim with costs and would not appeal, and that in the circumstances the plaintiff would not ask for any remedy on his claim.

Taylor *v.* Prior.—*Queen's Bench Division*: Glyn-Jones *J.* Oct. 29, 1956. Rudolph Lyons, Q.C., and E. John Parris (Jaques & Co. for Puckering Cooper Harland & Witcombe York); K. E. Shelley, Q.C., and D. Falconer (Field Roscoe & Co.); F. E. Skone-James (Hempsons).

J. F. LAMB
Barrister-at-Law.

A Coroner's Suggestion

The Birmingham city coroner has suggested that, when any patient is taken into a casualty department, particularly after a fall downstairs, his ribs should be carefully examined.[1] The coroner was inquiring into the death of a woman, aged 70, who had died from pneumonia caused by fractures to eight ribs sustained as a result of a fall downstairs. After the fall she was taken to hospital where she was twice examined and found to have a broken ankle. Neither examination revealed the fractures to the ribs, and on both occasions she was allowed to go home.

The doctor who examined her on the first occasion said that she found that the patient had a fractured left ankle. The patient had also complained of pain in her left lower side but not of pain in the ribs. The doctor did not examine the ribs. She agreed with the coroner that it was a common thing for people to fracture ribs when they fell downstairs, but in that case they usually complained of pain.

Asked why she did not keep the patient in hospital, the doctor replied: "I was a little doubtful but, as I could find nothing wrong with the examination of the chest, I thought she was perfectly fit to go home." The patient was seen at the hospital next day by another doctor; the ankle was satisfactory and she was again sent home.

The doctor who conducted the necropsy said that he thought that the broken ribs should have shown on X-ray examination, but they were in such a position that they might not be obvious.

The coroner said that he was satisfied that the failure to get the patient into hospital did not accelerate her death.

Appointments

AITON, MARGARET, H. E., M.B., D.O.M.S.: part-time assistant ophthalmologist, school clinics, Derby.

BATCHELOR, A. D. R., M.B. Edin., F.R.C.S.E.: consultant plastic surgeon, Bangour General Hospital, Royal Infirmary and Royal Hospital for Children, Edinburgh.

BOOTH, EDITH, M.R.C.S.: consultant psychiatrist for child-guidance service, Buckinghamshire area.

BRUNTON, J. M., M.B. St. And., D.M.R.D.: consultant radiologist, east and west Fife areas.

CALNAN, C. D., M.B. Camb., M.R.C.P.: consultant dermatologist, St. John's Hospital for Diseases of the Skin, London.

DAVIES, J. H., M.B. Lond.: assistant pathologist (S.H.M.O.), department of clinical investigation, Royal Marsden Hospital, London.

DOBREE, J. H., M.S. Lond., F.R.C.S., D.O.: consultant surgeon, department of ophthalmology, St. Bartholomew's Hospital, London.

HOPKINS, G. B., M.B. Birm., D.P.H.: M.O.H., Blandford and Wimborne Minster, Dorset.

HOUSTON, R. R., M.B. Glasg., D.P.H.: senior assistant M.O., Lanarkshire.

JEVONS, N. A., L.M.S.S.A.: senior assistant school M.O., Wolverhampton.

MILLER, D. G., M.B. Camb.: assistant pathologist (S.H.M.O.), Warrington group of hospitals and Winwick Hospital.

MORRICE, J. K. W., M.D. Aberd., D.P.M.: deputy physician-superintendent, Dingleton Mental Hospital, Melrose.

PUGMIRE, S. L., L.R.C.S.I.: assistant psychiatrist, Pewsey group of mental-deficiency hospitals.

ROBERTSHAW, NANCY M. E., M.B. St. And., D.OBST., D.C.H.: senior assistant M.O., Cheshire.

SCOTT, J. E. S., M.B. Camb., F.R.C.S.: part-time surgical outpatient assistant, The Hospital for Sick Children, London.

WILD, BIDI MARY, M.B. Camb., M.R.C.P.: house-physician, The Hospital for Sick Children, London.

1. *Birmingham Gazette*, Nov. 1, 1956.

Obituary

MATTHEW JOHN STEWART

C.B.E., M.B., LL.D. Glasg., Hon. M.D. Melb., F.R.C.P., F.R.F.P.S.

Dr. Matthew Stewart, emeritus professor of pathology in the University of Leeds and till last year editor of the *Journal of Pathology and Bacteriology*, died on Nov. 8 at his home at Stoke Poges.

He was born at Dalmellington, Ayrshire, in 1885, and was one of the band of well-known pathologists who came from Glasgow University. When he qualified in 1907 it was being said in Glasgow that the way to medicine was through the pathological laboratories, and that "to know your medicine you must know your fevers." Accordingly Stewart, the Brunton man of his year, after serving that exacting master Samson Gemmell as resident, joined John Brownlee at Ruchill Fever Hospital. In that stimulating atmosphere his natural taste for culture of many kinds flourished, while he absorbed from Brownlee a lasting respect for statistical methods. On leaving Ruchill Stewart's pathological career began under J. H. Teacher at the Glasgow Royal Infirmary, and in 1910 he went to Leeds as clinical pathologist to the Royal Infirmary. The 1914–18 war found him in France with a Territorial hospital, and for some time he was stationed in the St. Omer area. But before the war was over he was recalled to Leeds where Grünbaum's death had left the chair of pathology vacant. Stewart applied for the chair and was appointed, as he would smilingly recount, by the casting vote of the chairman. Certainly Leeds was well served by the chairman's vote, for until he retired in 1950 Stewart was the effective and devoted occupant of the chair of pathology, a bulwark of strength to its medical school, a well-loved and capable teacher, a man of business, and in succession sub-dean and dean of the faculty of medicine, and pro vice-chancellor of the university.

J. Path. Bact.

As the years went by Stewart's status as a pathologist grew. He was essentially a morbid anatomist and histologist, and his opinion was widely sought in the diagnosis and interpretation of difficult pathological material. He was an active and authoritative member of the National Radium Commission's pathological advisory committee and the histological panel of the British Empire Cancer Campaign. His interest in his subject was wide and his papers included contributions to bacteriology as well as to pathology. Among the latter his work on the pathology of bone tumours, chordoma, and gastric diseases, on which he wrote a book with Hurst, were outstanding. He also, with Dr. Alice Marshall and others, was responsible for *Teacher's Obstetrical and Gynæcological Pathology*, published after Stewart's old chief's death and in part based upon his uncompleted work. Above all, and it is a contribution easily overlooked, there is the mass of records of post-mortem examinations which Stewart built up at the Leeds General Infirmary. He had performed most of the necropsies himself over some thirty years. Under his careful handling these are a valuable source of information for any inquirer into the statistics of post-mortem observations.

In 1933 the new Algernon Firth Institute of Pathology of the Leeds Medical School was built. This housed the departments of pathology, bacteriology, and cancer research, and was planned largely to the ideas provided by Stewart and his colleague Prof. J. W. McLeod. As might be expected, the hub of Stewart's department was the pathological museum. He realised how much this expressed his personal addiction, and would say with a charming grin that he hoped later generations would not dub it "Stewart's folly."

Among pathologists he will be remembered particularly for his editorship of their journal. After some years as assistant editor he succeeded Boycott in 1934, and he became an outstanding editor. The 33 volumes published under his editorship are his enduring monument, and the Pathological Society owes him a great debt. Last summer, at the 50th anniversary of the society's foundation, Stewart's past and present colleagues on the committee presented him with a Georgian tea service as a token of their affection and of his service.

A wise, well-balanced, and experienced counsellor, he was much sought after for committee work, and he served on the General Medical Council, the Medical Research Council, the British Empire Cancer Campaign, and many other bodies. In 1924 he was elected F.R.C.P. In 1938 he received the LL.D. degree from Glasgow University and in 1951, when on a visit to Australia, the honorary M.D. from Melbourne University.

Behind the professor, the pathologist, and the editor was a man of character, who, as these tributes from his friends show, enjoyed the whole art of living in his own period:

For six years I was one of Stewart's assistants in editing the *Journal of Pathology and Bacteriology*. Right from the start and throughout our association he made it clear that I ought to place this duty above all others. It was impossible to protest very much about this, for his own devotion to the work was beyond belief. Nothing that I could do was more than a fraction of what he undertook himself; and his example silenced many a well-rehearsed objection. To Stewart, a long railway journey was nothing but a splendid opportunity to read manuscripts or check proofs. Indeed, he carried some copy with him wherever he went—even, as I was told, on a visit to the theatre on an exceptional occasion when he was persuaded to use some of his precious time in this way. Perhaps he did too much for his contributors; certainly he re-made many unpromising manuscripts.

At one time I suggested very strongly that a number of the manuscripts on our hands could be rejected with advantage to our journal, our subject, and our authors. I made little impression on him with this line, however, because he regarded it as part of his editorial duty to teach young men how to write. In this way he made a contribution to British pathology which rightly earned him a special place. If a manuscript had any virtue, especially if it had good illustrations, he would re-write the whole thing if necessary. Sometimes, I think, his amendments may have exasperated experienced contributors, for Stewart seldom saw a sentence that he could not refashion nearer to his own preferences. But he had a clear mind and a gift for simple expression, and so he could often justify even his minor transliterations; this—and his unfailing personal charm—secured him a very high proportion of his own way, which he certainly preferred to any other. He was interested in the use of language and would always willingly debate a question of English usage. Debated points were often finally settled by reference to what he affirmed would have been acceptable to Boycott, his predecessor as editor, whom he held in great respect. Agains this, all other arguments failed. In this way also, a number of manuscripts were rejected "out of hand," as he put it: these included any which seemed to be "small parts of a serial story," any which described methods, however elegant, but did not show results ("the recipe without the pudding"), and—above all—any which "trenched upon duplicate publication." Sometimes he would send me a manuscript which he guessed that I might wish to reject, but which he had resolved to accept. His method of dealing with this was to edit a page or two himself and to send a covering letter telling me that we could hardly reject this now because we had kept it rather long for that and because he had actually begun the editing and would leave it to me to deal with what seemed to be "a number of merely technical obscurities and difficulties which will doubtless be more in your province than mine. Of course, if you were to insist upon rejection . . ."

In personal encounters he was irresistible. He entertained handsomely, for he had a genuine appreciation of good food and wine and loved to share his enjoyment. He was easy to talk with because he greatly enjoyed the interplay of personalities and situations, and was not averse to an occasional bit of plain mischief in conversation. He was a member of the Pepys Club. He enjoyed good books, good paintings, old

silver, old churches, and anything that brought in the feeling of the countryside and its people. Above all he enjoyed the Pathological Society and all its affairs.

J. W. H.

As a pathologist Matthew Stewart was not an experimentalist but rather a peculiarly keen observer of the human body whether examined with the naked eye or in the form of tissue-sections under the microscope. This faculty combined with a phenomenal memory, aided by systematic correlation of notes and sketches of lesions, and an energetic pursuit of every line of investigation opened up made his domination of the post-mortem room an inspiration to all who attended. Visitors from other centres carried away the impression that whatever else might be well or less well done in Leeds, the teaching of pathology was outstanding.

His interests were in persons and things rather than in theories and discussions and it was a source of amusement to his colleagues to observe him steadily correcting proofs for "the Journal" through interminable debates in the senate; but with an ear curiously alert to the mention of any matter nearly or remotely affecting the faculty of medicine which he guided so well as dean for many years.

To me it was a constant source of amazement that any man could do so many things and do them so well, from stamp-collecting to the editing of a scientific journal, and yet be at the disposal, and that in a prodigal way, of all who came to him for advice or assistance. With him no-one ever felt that he was coming to an important person difficult of approach, for Stewart seemed equally genial and at ease with his humblest and his more distinguished visitors. It was characteristic that when he travelled he always had a host of people with whom he had to make contact, fellow students of 40 years back, research-workers in his department in the previous 25 years, nurses whom he had known as resident in hospital and so forth. It is not difficult, therefore, to understand that he had so many friends and that his going will be keenly regretted in so many parts of the world.

J. W. McL.

We shall always remember his endearing mannerisms. He was an energetic man of shortish build with heavy eyebrows, friendly eyes, and a ready smile. He radiated good nature and humour. He spoke quietly; his approach was always gentle and polite. He had a way of buttonholing you and saying with a mischievous twinkle and in that attractive Ayrshire lilt of his: "Did I ever tell you this one?" He had amassed a fund of anecdotes with a pleasant background of gillies and heather, but also, when in more serious mood, of instructive case-records to elucidate the histological problem you had brought to him. A Saturday spent looking through that box we all keep labelled "cases not yet diagnosed" provided him with real enjoyment and us with fresh and entertaining memories of a man who went out of his way to share his experiences with others. Then there were those hurriedly penned letters and postcards (what a mountain of paper he must have consumed) which took so long to decipher. Concise and factual as they always were, they never ended without a personal message and "regards to the guid wife."

W.

To one who has known him for half a lifetime, the outstanding trait in Matthew Stewart's character was his capacity for friendship, which far exceeded that of any man of my acquaintance. He not merely knew and remembered those with whom his life and interests brought him into contact, but he knew all about their relations and collaterals, and his interest in them was not merely curious or perfunctory or polite; it was a real heartfelt enjoyment of friendship and companionship and, of course, it brought in return a liking and affection which were tremendous and spread all over the world.

Towards the end of his life a chronic and progressive cardiac trouble showed itself. He collapsed one day in a street in Leeds when hurrying to the station: an ambulance was sent for but it arrived to find that Matt had caught his train and was on his way to London. He collapsed at a meeting of the Pathological Society, on a cold and foggy day last December, and was admitted to the Westminster Hospital: he was to fly to South Africa the next week. The physicians shook their wise heads: Matthew and Mrs. Stewart caught their plane and he fulfilled his engagements. *Fortiter in re, suaviter in modo*, courageous to the end.

J. H. D.

In 1913 Professor Stewart married Dr. Clara Eglington, who survives him.

PERCY SAMUEL LELEAN

C.B., C.M.G., F.R.C.S., D.P.H.

Colonel P. S. Lelean, emeritus professor of public health in the University of Edinburgh, died on Nov. 6 at the age of 85.

He was born in Canada, but he was educated in this country and qualified in 1895 from St. Mary's Hospital, London. Four years later he was admitted F.R.C.S. After serving as a civil surgeon in the South African Field Force he was given a commission in the Army Medical Services. In 1903 he was with the Anglo-French commission which traced the boundary between British and French territories from the Niger to Lake Chad, and from 1906 to 1912 he served with the R.A.M.C. in India.

During his Army career he specialised in military hygiene, and his name is associated with the invention of a highly efficient field disinfector. His textbook on military hygiene brought him recognition, and he was appointed professor of hygiene in the Royal Army Medical College. In the 1914–18 war he carried out some of the early research into protective measures against gas attack, and by his technical knowledge of war sanitation he made a fine contribution to the work of the R.A.M.C. He was four times mentioned in despatches, and was appointed C.B. in 1916 and C.M.G. three years later.

He retired from the Army in 1922; and six years later he was appointed professor of public health in the University of Edinburgh—a post which he held until 1944. Among his many activities he gave much time to the cultivation of physical fitness among young people. He was hon. president of Edinburgh University Athletic Club, and a member of the general committee of the Scottish Amateur Athletics Association. For many years he acted as official judge and timekeeper. Through his great interest in all forms of athletics and physical education he was largely instrumental in the foundation of the department of physical education in the university.

A colleague writes:

Lelean was an eminently practical man. In his reorganisation of the public-health course he threw himself with tremendous enthusiasm into the creation of a museum. This was, of its kind, extremely good, with models of sanitary appliances and practical demonstrations of hazards to health. He was one of the first teachers to deal boldly with sex problems, no doubt because he had seen so many tragedies of ignorance during his military career. He maintained a fairly rigid class discipline, and even in the field-work students remember him at the head of his troops, so to speak, when they went to sewage works and water-supplies. Well to the fore, his keen, spare figure cut like a silhouette as he strode along, or broke into a run, while the group panted behind. On such occasions he would wield a megaphone to spread the gospel of health among his followers. He was never so happy as when he was in the company of young folk, and he worked with and for them with unsparing zeal.

Colonel Lelean married in 1902 Mary Ellen, daughter of the late John Gillam. His wife died in February, and he is survived by two daughters.

Professor BARNES

"As a one-time member of the staff of a rival institution," A.E.N. writes:

"Barnes was of the company of Saints: implacable where he considered injustice had been done; unrivalled in magnanimity, in whatever quarter the call for succour might arise. As a clinician he was of true Cos descent, testing all matters of doubt by close, unbiased, first-hand observation; critical and eager to be convinced of error. The words of 'The Happy Warrior' by Wordsworth might well be inscribed on his tomb."

Births, Marriages, and Deaths

BIRTHS

WILKINSON.—On Nov. 3, 1956, to Clodagh (formerly Boyd, of Cape Town), wife of Dr. John Wilkinson, of 20, Drury Lane, Lincoln—a daughter.

Notes and News

THE REFUGEES

In his appeal for the refugees from Hungary, the Lord Mayor of London points out that "they have no means or prospect of support except from the generosity of those throughout the world whose sympathies have been aroused." He wants to raise £1 million within the next fortnight, and will distribute it through existing organisations equipped to bring prompt relief where it is most needed. Contributions may be sent to him at the Mansion House, London, E.C.4, marked "Hungarian Relief."

Various bodies are helping the Austrians to relieve the refugees who have already crossed the border. Swiss and Swedish Red Cross missions are supported by the British Red Cross Society (14, Grosvenor Crescent, S.W.1). The medical supplies bought for Hungary by the Friends' Ambulance Unit, and supplemented by the manufacturers, have been taken to Austria; and a team, it is hoped, will go this week (contributions, for further medical supplies, to the F.A.U., Tunmers, Chalfont St. Peter, Bucks). The Friends' Service Council has a team working from Vienna with American Quakers, and needs money for local purchase of necessities (Friends House, Euston Road, N.W.1). So does the Save the Children Fund (12, Upper Belgrave Street, S.W.1) which has undertaken the care of 200–300 children in Austria, where the cost of food for each child is £2–3 a week. The Hungarian committee in London (the Central Committee of Hungarian Relief) has its headquarters at 5, Arundel Gardens, W.11.

The Government some days ago announced that 2500 Hungarian refugees would be admitted to this country, and a Home Office mission is now in Austria. The care of the refugees in this country is to be undertaken by the British Council for Aid to Refugees (9, Grosvenor Crescent, S.W.1).

FELLOWSHIP FOR FREEDOM IN MEDICINE

The annual general meeting of the fellowship was held on Nov. 10. Sir David Gammans, M.P., who was to have been the principal speaker, was unfortunately prevented from attending by illness.

Referring to the remuneration claim, Dr. R. Hale-White, the chairman, said it seemed that the Government was not standing by the conditions under which the profession agreed to enter the National Health Service, and it seemed likely that the Minister's handling of the situation was again mistaken because he had been badly advised by his officials, who appeared to be under the impression that doctors were merely a quantity of personnel to be used for running the service. If the Government found that the country could not afford a National Health Service as at present constituted, it ought to come out into the open and say that the whole service should be rebuilt on lines that the country could afford.

The following resolutions were passed:

While appreciating that a National Health Service is necessary, the Fellowship notes the decline in standards which is developing as a result of the faults of the existing service and declares its renewed determination to do all in its power to reverse this trend and to stress that, in the interests of the patient, Medicine should be a vocation as well as an occupation.

This Fellowship expresses its keen disappointment that the Guillebaud Committee, despite its wide terms of reference, proved incapable of suggesting any real improvements or economies in the Health Service.

That some form of financial encouragement and assistance should be given to patients who choose to make their own arrangements for private medical treatment; and one method of achieving this would be by allowing tax relief in respect of premia paid to approved insurance organisations providing cover for the expenses of private treatment.

This meeting emphatically condemns once more the discrimination against those members of the public who, because they choose to receive their treatment privately, are denied drugs on the same terms as N.H.S. patients, and urges the Minister to correct this anomaly without further delay.

This meeting instructs the Executive to reopen the question of the removal of the restrictions on the disposal of goodwill of medical practices when they consider the time to be appropriate.

The Fellowship reaffirms its belief that Medicine should be freed from party political control.

ANALYSIS OF DRUGS

The usual choice of drugs for analysis under the Food and Drugs Act struck Mr. H. H. Bagnall, the Birmingham city analyst, as unimaginative, and since 1951 he has extended his activities beyond the usual range of Epsom salts, aspirin, and other household remedies. In his report for 1955 [1] he answers criticisms of this by pointing out that the Food and Drugs Act allows the purchase of any drug. Samples of many vitamins, trinitrin, amphetamine, stilbœstrol, and other potent drugs have been purchased under a special scheme in agreement with the local pharmaceutical association and analysed in his laboratory. This has been done unofficially and the results, which are not published in the report, are sent to the pharmacists concerned on the understanding that they will act on unfavourable findings.

Of the 568 samples of the more homely drugs examined last year, 5·5% were found to be unsatisfactory. In most cases the proportion of some ingredient either differed from that stated on the label or was outside the limits allowed by the law. Few of the faults were likely to cause grave ill effects and no legal action was taken.

AMINO-ACID CONTENT OF FOODS

Those of us in the Animal Kingdom who cannot readily synthesise our own essential amino-acids must get them where we can, and the tables issued by the Commonwealth Bureau of Animal Nutrition [2] will help to direct the search. They also provide indispensable information in handy form for many workers in biochemistry and nutrition. They were compiled from many sources to which full references are given. The foods listed range from human milk to mycelia and from sting-ray to crested dog's tail grass; their content of each of eighteen amino-acids is set out, usually in terms of g. per 16 g. of nitrogen.

OBSTETRICS IN GENERAL PRACTICE

In their memorandum to the Cranbrook Committee, which is inquiring into the maternity services, the council of the College of General Practitioners [3] say that these "would be coördinated and improved if general practitioners were encouraged, and given the opportunity, to assume greater responsibility for pregnant women." They regard the family doctor as the unifying influence who should arrange for the care of the mother through her pregnancy, confinement, and puerperium. If he does not attend her himself at this time he should be kept aware of all developments, not only because he may be called if any emergency arises during the pregnancy, but because he will be responsible for the general care of the mother and child. The college would like to see general practitioners staffing the antenatal clinics, where the doctor, midwife, and health visitor should consult together.

About half the babies in England and Wales are still delivered at home, but the tendency is still towards more confinements in hospital. The college council draw attention to a scheme by which the mother is confined by her own doctor in a ward attached to an obstetric unit and then goes home 24–48 hours later.[4] They believe that practitioners undertaking obstetrics should have access to beds in a well-equipped and well-staffed unit, with the services of general-practitioner colleagues experienced in obstetric anæsthesia. In these circumstances the family doctor is capable of coping with many abnormalities.

One of the appendices to the memorandum is a report [5] of a conference held by the college a year ago at which various kinds of organisation for obstetrics in general practice were suggested. These included a base hospital in each area with small general-practitioner maternity units around it; this would work best with group practice so that a doctor could leave his general work to attend to an obstetric case in hospital. Another scheme provides that in each area one general practitioner would confine his obstetric attention to abnormal cases referred to him by local colleagues, leaving the others to care for the normal cases. A speaker at the conference pointed out that the meaning of "obstetrician" is "one who stands beside," and suggested that a general practitioner is more likely to do this than a gynæcological surgeon, who is more likely to interfere and operate.

1. City of Birmingham: Annual Report of the city analyst for the year 1955. By H. H. Bagnall, B.Sc., F.R.I.C.
2. Tables of the Amino Acids in Food and Feedingstuffs, compiled by D. Harvey. Commonwealth Agricultural Bureau, Farnham Royal, Bucks. 1956. Pp. 52. 15s.
3. Memorandum on General-practitioner Maternity Services. From the College of General Practitioners, 14, Black Friars Lane, London, E.C.4.
4. Sluglett, J., Walker, S. *Lancet*, 1956, i, 684.
5. Proceedings of a Conference on General-practitioner Obstetrics. 1956. Pp. 40. 3s. 6d.

CONTRACEPTIVE TECHNIQUE

A LECTURE on contraceptive technique for final-year students of all London medical schools was given by Dr. Sylvia Dawkins at University College Hospital Medical School on Nov. 9.

Prof. W. C. W. NIXON, the chairman, explained that the lecture had a twofold purpose: firstly as a memorial to the pioneer work of the late Dr. Joan Malleson on contraceptive technique and the soothing of marital difficulties, and in particular to her work at University College Hospital; and secondly, as a means of disseminating knowledge of the importance and of the technique of modern contraception. At University College Hospital all students could learn these techniques, and in the postnatal clinics of the Obstetric Hospital all mothers were given an opportunity to obtain contraceptive advice if they wished for it. He thought that this was the right place and function for a hospital contraceptive clinic and hoped that all postnatal clinics would one day provide such facilities. The general practitioner must be able to advise these mothers too, and there was a much wider need and demand which was better met by him. The Family Planning Association had sponsored the lecture because most London and Provincial medical schools did not provide any instruction on contraception. Professor Nixon reminded the audience of the difficulties and opposition against which the pioneers had had to struggle and how it had taken twenty-five years before such a public lecture as this for medical students could be given. He appealed for much more widespread teaching of contraceptive technique and hoped that it would not be another twenty-five years before all medical schools included the subject in their curriculum. The two hundred students who were turned away from the packed lecture-theatre was a measure of the demand for such information.

Dr. DAWKINS, who has succeeded Dr. Malleson at University College Hospital, discussed the medical, social, and economic indications for contraception and quoted from the Report of the Royal Commission on Population which very strongly favours widespread knowledge of and opportunity for effective family spacing. It was not enough, she said, to recommend that patients have no more children, or that they should space them more widely. They had to be told how to do it. The methods were described, and were illustrated by a film.

MRS. MARGARET PYKE, chairman of the executive committee of the Family Planning Association, thanked Dr. Dawkins for her lecture, and Professor Nixon and University College Hospital Medical School for their support and for allowing the lecture to be given on their premises.

University of Oxford

On Nov. 3 the degree of B.M. was conferred on R. H. Martin.

University of Cambridge

On Nov. 3 the following degrees were conferred:

M.D.—F. J. Conway, *Gillian F. Jacob, M. H. Lessof, D. A. Pyke, *A. W. Robinson, G. O. Storey.
M.B.—*M. W. Sleight.

*By proxy.

University of London

Mr. D. S. Bertram, PH.D., reader in entomology at the London School of Hygiene and Tropical Medicine, has been appointed to the chair of medical entomology at the school.

University of Durham

The title of professor emeritus has been conferred on Dr. F. J. Nattrass, formerly professor of medicine in the Newcastle division, and on Mr. Norman Hodgson, formerly professor of surgery in the division.

University of Bristol

The status of professor of public health has been conferred on Dr. R. C. Wofinden, medical officer of health for Bristol. Dr. E. G. Bradbeer, clinical teacher in anæsthetics, has been appointed head of the department of anæsthetics for the session 1956–57.

University of Dublin

Dr. Donald Hunter will give the Frederick Price lecture at the school of physic, Trinity College, on Friday, Dec. 7, at 4.30 P.M. He is to speak on the Present Need of a Sense of Historical Perspective.

University of St. Andrews

Dr. D. A. McGreal has been appointed lecturer in child health at Queen's College, Dundee.

Royal College of Surgeons of England

At a meeting of the council on Nov. 8, with Sir Harry Platt, the president, in the chair, honorary medals of the college were awarded to Lady Webb-Johnson, Mr. W. R. Gibson, and Mr. Edward Lumley for their services to the college.

A court of patrons has been instituted and the following have been elected members:

Viscount Nuffield, Sir Hugh Lett, Lord Webb-Johnson, Lady Webb-Johnson, Sir Arthur Sims, Sir Edward Baron, Sir Simon Marks, Mr. Edward Lumley.

The council received with much gratification a further gift of £35,000 from the Wellcome Trustees for the completion of the Wellcome Museums in the college.

Sir Russell Brock was appointed Bradshaw lecturer for 1957. Sir Wilfred Fish, dean of the faculty of dental surgery, was coöpted to the council as the member representing dental surgery. Dr. Gerald R. Graham and Mr. Dennis W. Hill were appointed research assistants in the department of anæsthetics.

The John Tomes prize for 1954–56 was awarded to Prof. A. E. W. Miles (London Hospital), honorary curator of the Odontological College. The second Sir William Lister award in ophthalmology was granted to Dr. D. N. Maurice (Institute of Ophthalmology). The Begley prize was awarded to Miss Jean A. Hagger (King's College Hospital Medical School).

Diplomas of membership and postgraduate diplomas were granted to the candidates named in our report of the comitia of the Royal College of Physicians (*Lancet*, Nov. 3, 1956, p. 950).

Royal Faculty of Physicians and Surgeons of Glasgow

On Nov. 5 the following were elected office-bearers for the coming year:

President, Prof. Stanley Alstead; visitor, Mr. Arthur Jacobs; hon. secretary, Dr. A. H. Imrie; hon. treasurer, Dr. J. A. W. McCluskie; hon. librarian, Dr. A. L. Goodall; immediate past-president, Prof. Stanley Graham; representative on the General Medical Council, Dr. Andrew Allison; councillors, Dr. A. D. Telford Govan, Dr. D. McKay Hart, Dr. Samuel Lazarus, Dr. Hector R. MacLennan, Mr. D. C. Miln, Dr. P. R. Peacock, Dr. Gavin B. Shaw, Mr. R. B. Wright.

Royal College of Physicians of Edinburgh

On Nov. 6 the following were elected to the fellowship:

G. L. Adamson, R. J. Collins, T. H. Howell, M. S. Harrison, R. A. Palmer, Albert Rabinowitz, J. M. Henderson, J. P. J. Paton, James Leckie, W. R. N. Friel, R. M. Fulton, C. F. Rolland, J. A. Tulloch, A. F. J. Maloney, R. M. Marquis, R. G. Mitchell, W. M. Harrowes, J. C. Hogarth, A. W. Lees, J. C. Bowe, A. D. T. Govan, J. R. Bailey, W. A. Murray, A. M. Fraser, R. J. Peters, J. W. Crofton, F. F. Main.

The following were elected to the membership:

D. J. M. Mackenzie, H. B. Craigie, E. H. Mirando, Kenneth Murray, Niranjan Chatterjee, Narendra Jagmohandas Choksey, Jnanendra Nath Mandal, J. K. Oates, N. R. W. Taylor, A. H. C. S. Gieben, Eric McKay, D. C. Watler, Reuben Sougin-Mibashan, Muriel E. Sidaway, A. G. Baikie, Ramchandra Dattatraya Lele, Shree Chandra Kaushik, Ananda Lal Goswami, Warren Hawkins, Cheung-Chih Wong, Jean M. Arkieson, E. J. Epstein, Amir Khan, Syed Nasser Ahmad Shah, Francis Chemfaa Wong Lunking, Audrey M. Bolton, W. R. Cattell, D. N. S. Kerr, R. E. Mackie, J. R. Officer, R. J. Cantwell, Amal Kumar Dutta, D. M. Krikler, John Davenport, Marcel Malden, Debi Charan Choudhury, Andrew Doig, D. B. Shaw, Gyan Prakash Elhence, L. C. Isaacson.

Royal Society of Medicine

William Gibson research scholarship for medical women.—Applications are invited from women who are British subjects and who hold a registrable medical qualification. Further particulars may be had from the secretary of the society, 1, Wimpole Street, London, W.1.

Royal Society

A Royal medal has been awarded to Mrs. Dorothy Hodgkin, F.R.S., for her work on the elucidation of structures of penicillin, vitamin B_{12}, and other compounds by methods of X-ray crystallography.

Acute Respiratory Infections

A discussion on this subject for general practitioners is to be held at the Institute of Diseases of the Chest (in the grounds of the Brompton Hospital, Fulham Road, London, S.W.3) on Dec. 4, at 2.30 P.M. The opening speakers will be Dr. Neville Oswald, Dr. J. G. Scadding, Dr. J. R. May, and Dr. John Fry.

Rumanian Congress Postponed

The national congress of medical sciences which was to have been held in Bucharest this month has been postponed till April.

Research into Ageing

Entries for the 1957 Ciba Foundation awards for papers on research into basic problems of ageing must reach the foundation, 41, Portland Place, London, W.1, not later than Jan. 31.

Marlborough Day Hospital

Doctors and other mental-health workers are invited to lectures held at this hospital, 38, Marlborough Place, London, N.W.8, on the first Monday of every month at 8.15 P.M. On Monday, Dec. 3, Dr. Desmond O'Neill will speak on a psychiatric view of gynæcology and obstetrics.

British Medical Association's Council Dinner

At this dinner, on Nov. 6, the customary toast of The Common Health was proposed by Dr. Alexander Hall, president of the association. Quoting Disraeli's dictum that "the Health of the People is really the foundation on which all their happiness and all their power as a State depend," he said that the State had done much to improve living and working conditions, and the sum of human happiness had greatly increased, since Disraeli spoke those words. But the State's efforts might be made in such a way that people failed to appreciate the fact that while their happiness might to some extent depend on what they got out of the kitty, the power of the nation depended on what they put into the kitty. In cultivation of the will to be and keep fit, the family doctor, the M.O.H. and his team, the school medical officer, and the industrial medical officer could all help—especially if they all remembered that in the house, the hospital, and the factory they were dealing with people. (Perhaps doctors had been concentrating too much on the *Homo* and tending to underestimate the *sapiens*.) The success and value of direct health talks in factories made him wonder whether equal benefit might come of direct talks in the home, the school, the community centres, and so forth. "Don't let us be deluded," he said, "into thinking that free hospitals, free this, that, and the next thing in the way of medical treatment can alone provide the answer to the problem of the Common Health." More must be done to foster health culture, both physical and mental, as well as treat the sick.

Mr. R. H. Turton, the Minister of Health, responding, said that one of the difficulties in the National Health Service was the fact that three streams flowed in parallel lines. Only the general practitioner, he believed, could bridge them, and for success he must be the clinical leader of the domiciliary team. Such leadership was no sinecure, and he recognised the difficulty for general practitioners who had no time to spare; yet it was vital if we were to secure the coöperation essential to obtain the Common Health.

Proposing The Retiring Officers, Dr. S. Wand, chairman of council, spoke of the services of his predecessor (Dr. E. A. Gregg) and of Sir John McNee, past president, both of whom were prevented from being present. He welcomed Dr. T. C. Routley, immediate past president, who had made his 51st crossing of the Atlantic in order to attend. Lady McNee responded for Sir John, and Dr. Routley spoke of his presidency as a rich and rewarding experience. Viewing the B.M.A. from a distance, he was able, he felt, to appraise its strength, its influence, and its purpose a little more clearly than those who were immersed in its activities. Not only in Britain but throughout the world its record in safeguarding health and happiness, and its steadfast determination to keep up the standard of medical education and medical care, had evoked admiration and respect. But he added that what it had done was but a prelude to what it still had to do.

Dr. Ian Grant, chairman of the representative body, proposed The Guests, and Prof. J. F. Lockwood, vice-chancellor of the University of London, replied. During the evening, a copy of Muirhead Little's history of the association was presented to Dr. A. R. Grieve, whose application last September brought the membership to 70,000.

A 28-year-old Polish doctor would like to be put in touch with an English doctor, if possible someone with a special interest in children's diseases. Letters sent to this office will be forwarded.

CORRIGENDUM: *Wellcome Trust.*—The offices of the chairman and scientific secretary of the Wellcome Trust are now at 52, Queen Anne Street, London, W.1 (WELbeck 5721/2). We regret that in our announcement last week this new address was wrongly attributed to the Wellcome Foundation.

Diary of the Week

NOV. 18 TO 24

Monday, 19th

HUNTERIAN SOCIETY
8.30 P.M. (Apothecaries Hall, Black Friars Lane, E.C.4.) Earl of Verulam, Mr. A. Dickson Wright, Prof. W. Melville Arnott, Dr. J. H. Hunt: That Scientific Medicine is Incompatible with the Bedside Manner.

POSTGRADUATE MEDICAL SCHOOL OF LONDON, Ducane Road, W.12
4 P.M. Dr. J. P. M. Tizard: Mental Deficiency.

Tuesday, 20th

ROYAL COLLEGE OF PHYSICIANS OF LONDON, Pall Mall East, S.W.1
5 P.M. Sir Maurice Bowra: Greek Science—its Greatness and its Failure. (Lloyd-Roberts lecture.)

ROYAL SOCIETY OF MEDICINE, 1, Wimpole Street, W.C.1
8 P.M. *Pathology.* Dr. E. A. Boyse: Dispersal of a Neurotropic Herpes Virus in the Central Nervous System of Rabbits; Dr. R. G. Parker: Incidence of Primary Hepatic Carcinoma in Cirrhosis; Dr. H. Lehmann: Variations in Pseudo-cholinesterase Level.

ST. MARY'S HOSPITAL MEDICAL SCHOOL, Paddington, W.2
5 P.M. Mr. Ian Jackson: Carcinoma of the Vulva.

BRITISH POSTGRADUATE MEDICAL FEDERATION
5.30 P.M. (London School of Hygiene and Tropical Medicine, Keppel Street, W.C.1.) Dr. Paul Wood: Physiological Basis of Clinical Signs in Heart Disease.

INSTITUTE OF DERMATOLOGY, Lisle Street, W.C.2.
5.30 P.M. Dr. R. W. Riddell: Diagnosis of Fungus Infections.

UNIVERSITY OF LIVERPOOL
5.15 P.M. (Arts Theatre.) Prof. Brian McFarland: Life and Work of Thomas Porter McMurray. (First McMurray lecture.)

Wednesday, 21st

ROYAL SOCIETY OF MEDICINE
8.15 P.M. *General Practice.* Dr. Harold Bloom, Dr. Guy Daynes, Dr. H. C. Faulkner: Catarrh and its Treatment.

POSTGRADUATE MEDICAL SCHOOL OF LONDON
2 P.M. Dr. Victor Wynn: Salt and Water Metabolism.

INSTITUTE OF DERMATOLOGY
5.30 P.M. Dr. Henry Haber: Histology of Cellular Nævi.

INSTITUTE OF DISEASES OF THE CHEST, Brompton, S.W.3
5 P.M. Mr. T. Holmes Sellors: Atrial Septal Defects.

ROYAL MICROSCOPICAL SOCIETY, Tavistock House South, W.C.1
5.30 P.M. Dr. D. Lacy: Studies on the Neurones of Patella Vulgata by Light and Electron Microscopy.

MIDLAND MEDICAL SOCIETY
8.15 P.M. (Medical Institute, 154, Great Charles Street, Birmingham 3.) Mr. Terence Millin: Urinary Incontinence.

Thursday, 22nd

UNIVERSITY COLLEGE LONDON, Gower Street, W.C.1
5 P.M. Mrs. Dorothy Needham, SC.D., F.R.S.: Biochemistry of Muscular Action.

BRITISH POSTGRADUATE MEDICAL FEDERATION
5.30 P.M. (London School of Hygiene and Tropical Medicine.) Dr. J. C. Gilson: Tests of Lung Functions.

INSTITUTE OF OBSTETRICS AND GYNÆCOLOGY
3 P.M. (Hammersmith Hospital, London, W.12.) Prof. W. C. Nixon: Action of the Uterus in Labour.

INSTITUTE OF DERMATOLOGY
5.30 P.M. Dr. P. D. Samman: Reticulo-endothelial System and Reticuloses.

ROYAL EYE HOSPITAL, St. George's Circus, London, S.E.1
5.15 P.M. Dr. T. H. Whittington: Anisometropia, Aniseikonia, and Aphakia.

CHADWICK LECTURE
5.30 P.M. (90, Buckingham Palace Road, S.W.1.) Dr. P. A. Raffle: Health of the Worker.

NUFFIELD ORTHOPÆDIC CENTRE
8.30 P.M. (Wingfield-Morris Orthopædic Hospital, Oxford.) Mr. N. R. Greville: Mayo Clinic—Impressions of Three Years' Experience.

LIVERPOOL MEDICAL INSTITUTION, 114, Mount Pleasant, Liverpool, 3
8 P.M. Dr. D. J. B. Ashley: Two Cases of Hæmophilia with Normal Clotting-time; Dr. R. McL. Todd: Plasma Proteins in Rheumatic Fever and Nephrotic Syndrome.

ROYAL MEDICO-CHIRURGICAL SOCIETY OF GLASGOW
8.30 P.M. (Victoria Infirmary.) Mr. Denis Browne: Congenital Deformities.

HONYMAN GILLESPIE LECTURE
5 P.M. (University New Buildings, Teviot Place, Edinburgh.) Prof. Alexander Kennedy: Unreason and Inquisition.

UNIVERSITY OF ST. ANDREW'S, Queen's College, Small's Wynd, Dundee
5 P.M. Prof. N. H. Martin: Significance of Serum Globulins.

Friday, 23rd

ROYAL SOCIETY OF MEDICINE
8.15 P.M. *Obstetrics and Gynæcology.* Mr. W. G. Mills, Mr. Albert Davis, Prof. G. W. Theobald: Dysmenorrhœa and Unexplained Pelvic Pain.

POSTGRADUATE MEDICAL SCHOOL OF LONDON
10 A.M. Mr. Alan Hunt: Surgical Treatment of Portal Hypertension.
4 P.M. Mr. P. McGregor Moffat: Medical Aspects in Ophthalmology.

INSTITUTE OF LARYNGOLOGY AND OTOLOGY, 330, Gray's Inn Road, W.C.1
3.30 P.M. Mr. J. C. Hogg: Hoarseness.

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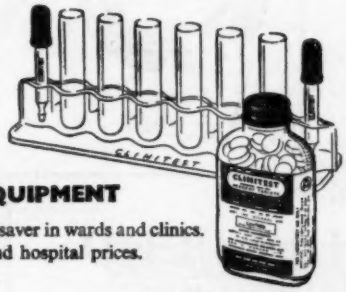

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REFERENCES

(1954) 'Clinical Tests for Ketonuria', *'Lancet', April 17th, pp. 801/804*
(1954) '*Medicine Illustrated*', *May, p. 289*
(1954) '*Practical Clinical Biochemistry*', *Heinemann, p. 74*
(1954) 'Clinical Tests for Ketonuria', *'Lancet', July 10th, p. 95*

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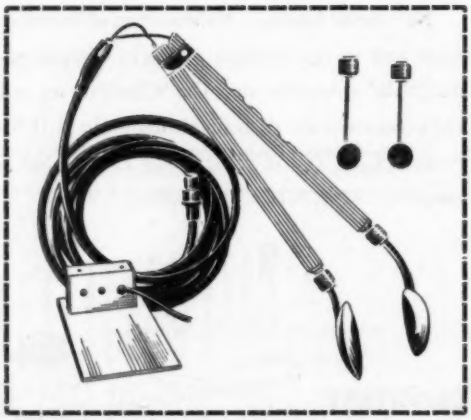

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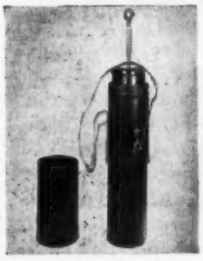

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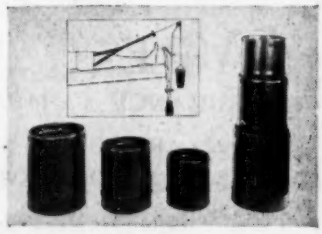

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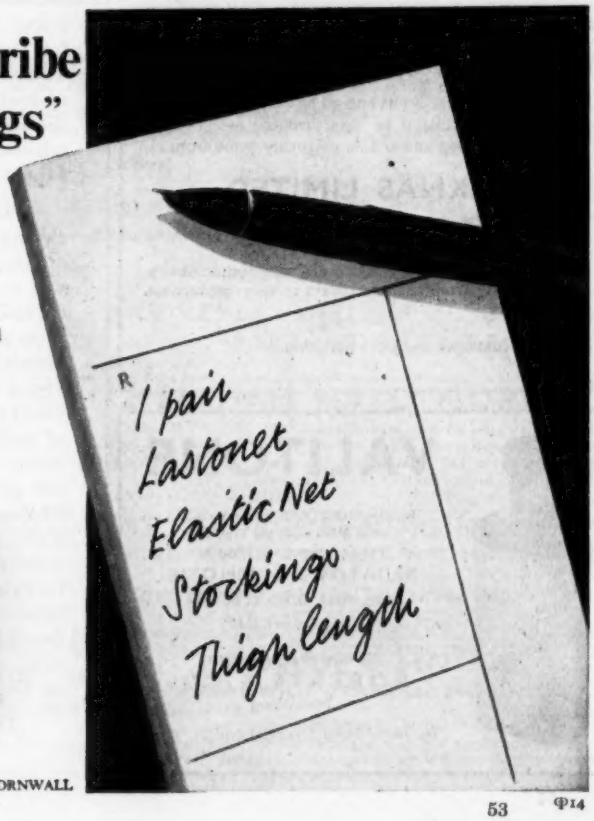

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The shareholders—and 99.99 per cent of the electorate of this country—had been led, he said, to believe by those who, in his opinion, should know better, that if the National Health Service foundered on the financial rocks, it would be due to the "high cost of drugs." Such a statement or impression was the reverse of the truth. Of the total cost of the National Health Service the cost of the medicines which it used accounted for 5 per cent—the other 95 per cent was made up of other costs including administration. The 1955–56 estimates alone showed an *increase* of £41,000,000 in the "other" costs, a sum greater than the whole of the drug bill for the year. The concentration of public attention on the 5 per cent, however, had undoubtedly served as a most effective diversionary effort or smoke screen to obscure criticism of the other 95 per cent of the expenditure.

During the past financial year sales of Bemax had set a new record in excess of anything achieved in the post war era. It was no doubt a tribute to the marked effect on health of regular Bemax that the product is so well known throughout the length and breadth of the land and indeed in most parts of the civilised world. Many complaints were heard these days of a feeling of frustration, or of undue fatigue or of being under par. We heard of listless children, of infants who did not grow as quickly as they should. The National Health Service treated them and us when we were ill but what about when we were not ill but below par? It was that twilight stage, that stage of betwixt and between, which most dramatically benefited from the steady use of Bemax. How different many of the frustrated and listless would be on Bemax.

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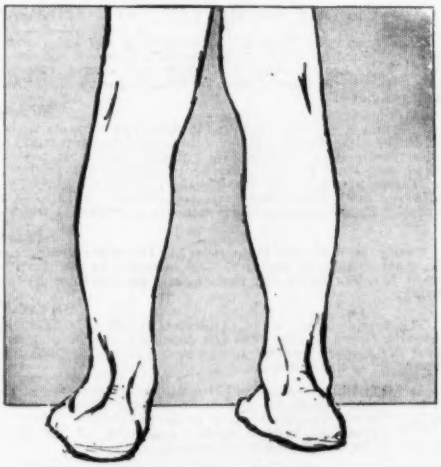

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These Lectures, which commence on MONDAY, 7TH JANUARY, at 4 P.M., are given under the auspices of the Homœopathic Research and Educational Trust and deal with the subjects required for examination for the Diploma of the Faculty of Homœopathy. Fee for registered medical practitioners, £10 10s. per session ; medical students admitted without charge.

Full particulars can be obtained on application to the Dean of the Education Course at the Hospital.

THE MEDICAL COLLEGE OF ST. BARTHOLOMEW'S HOSPITAL, West Smithfield, E.C.1. Applications are invited for the post of LECTURER IN ANATOMY tenable as from 1st January, 1957, or as soon after as possible. The salary will be on a scale of £900–£100–£1400 p.a., together with children's allowance and membership of the F.S.S.U. The commencing point on the scale will depend upon academic qualifications and experience in teaching and research.

Applications, which should be received not later than 7th December, 1956, should be addressed to the Dean of the Medical College, from whom further particulars may be obtained.

UNIVERSITY OF BIRMINGHAM. Faculty of Medicine. Applications are invited for the post of LECTURER IN PHYSIOLOGY at a salary according to qualifications and experience in the range £650–£1700 p.a. Applicants should be graduates in medicine or science and should have had post-graduate experience in some branch of physiology.

Applications (5 copies), together with the names of 3 referees, should be sent not later than 1st December, 1956, to the Assistant Registrar, Medical School, Birmingham, 15, from whom further particulars may be obtained.

G. L. BARNES, Secretary.

The University, Birmingham, 15, November, 1956.

CANCER INSTITUTE BOARD, Melbourne, Victoria, AUSTRALIA. Applications are invited for the position of ASSISTANT MEDICAL DIRECTOR of the Institute. The appointee is required to possess a senior Degree or Diploma in Medicine or Surgery, and/or equivalent specialist qualification in radiotherapy.

In addition to clinical duties, the Assistant Medical Director is required to deputise for the Medical Director during his absence and to perform such administrative duties as are required by the Medical Director. The Assistant Medical Director is an ex officio member of the Board.

The full-time salary is at the rate of £A4016 7s. p.a., including £A356 4s. current cost-of-living adjustment.

Other conditions of this appointment cover :

(*a*) Rights to limited private practice under certain conditions.
(*b*) Superannuation benefits.
(*c*) Long Service Leave in addition to recreation and sick leave entitlements.

The position is non-resident. An appointee from overseas will be granted first-class fares for himself and family together with an allowance of £(sterling)200 for the transport of furniture and personal effects, and when, for exceptional reason, the cost of transport of goods exceeds the usual allowance, the Board will consider a request for a supplementary allowance.

The Cancer Institute Board (Peter MacCallum Clinic) provides treatment for and conducts research into cancer and allied diseases. The Institute uses modern equipment for radiotherapy and has excellent facilities for research in the clinical sphere, medical physics, and pathology. The outpatient attendances are 18,500 annually and inpatient treatment is conducted.

Further information about the Institute and terms of appointment may be obtained from the Association of Universities of the British Commonwealth, 5, Gordon-square, London, W.C.1, or the Agent-General for Victoria, Australia House.

Applications, accompanied by copies of testimonials and names of 4 referees, to reach the undersigned before 31st December, 1956.

A. F. CAMERON, Manager and Secretary.

UNIVERSITY OF BELFAST. The Senate of the Queen's University of Belfast invites applications for a LECTURESHIP IN APPLIED PATHOLOGY from 1st April, 1957 (or such later date as may be agreed). The salary will be £1300–£50–£2025 with provision for superannuation. In certain circumstances the salary may rise to £2250. Initial placing on the salary scale will depend on experience and qualifications.

Applications should be submitted by 15th December, 1956. Further particulars may be obtained from G. R. COWIE, M.A., LL.B., Secretary.

UNIVERSITY OF NEBRASKA. Psychiatric Residents. New plan paying $38,100 offering 3 years fully approved training in a University Psychiatric Institute followed by 2 years supervised experience. Open only to graduates of medical colleges approved by A.M.A.

CECIL WITTSON, M.D., Professor and Chairman, Department of Neurology and Psychiatry, University of Nebraska, College of Medicine, Omaha, Nebraska, U.S.A.

Hospital Services : Senior Appointments

CHARING CROSS HOSPITAL. Part-time Consultant DIAGNOSTIC RADIOLOGIST (2 sessions per week), tenable at Harrow Hospital.

Candidates are asked to submit 10 copies of their applications, stating age, qualifications and experience and the names of 3 referees, to reach the undersigned not later than 14th December, 1956.

FRANK HART, Secretary to the Board.

Charing Cross Hospital, London, W.C.2.

NORTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. CONSULTANT ANÆSTHETIST (2 half-days a week—Wednesday mornings and afternoons), Highlands General Hospital, Winchmore Hill, N.21 (732 Beds). Hospital may be visited by direct appointment.

Application forms obtainable from, and returnable to, Secretary, North West Metropolitan Regional Hospital Board, 11A, Portland-place, W.1, before 17th December, 1956.

WESTMINSTER HOSPITAL, St. John's-gardens, S.W.1. CHIEF ASSISTANT (full-time) required in Department of Psychiatry (Senior Hospital Medical Officer grade). D.P.M., mental hospital experience and interest in psychotherapy essential. Terms and conditions of service of hospital medical and dental officers for the time being in operation apply. Canvassing of Members of Board or Advisory Appointments Committee will disqualify, but the Hospital may be visited by arrangement with the Physician in charge of the Department.

Applications (10 copies), with names of 3 referees, should reach the House Governor not later than 17th December, 1956.

BIRMINGHAM REGIONAL HOSPITAL BOARD. Tamworth General Hospital. (68 Beds.) Part-time CONSULTANT E.N.T. SURGEON (1 notional half-day weekly). Duties include quarterly visits to Chelmsley Hospital, Marston Green. Higher qualification/wide experience specialty essential.

Applications (15 copies), stating name, age, nationality, present and previous appointments and details of 3 referees, to Secretary, 10, Augustus-road, Birmingham, 15, by 3rd December, 1956.

BRISTOL. UNITED BRISTOL HOSPITALS. South-Western Regional Hospital Board. Applications are invited for the joint appointment of a CONSULTANT E.N.T. SURGEON to the United Bristol Hospitals and the South-Western Regional Hospital Board. The appointment will be on a maximum part-time basis, and the candidate appointed will work in the Teaching Hospital, in Southmead Hospital, Bristol, and in other Hospitals in the Bristol Clinical Area as determined from time to time. The programme of duties will be subject to review in the near future.

Applications, stating age, qualifications and experience, and giving the names of 2 referees, should reach the Secretary to the Board of Governors at the Bristol Royal Infirmary, Bristol, 2 (from whom further particulars may be obtained), not later than Monday, 3rd December, 1956.

EAST ANGLIAN REGIONAL HOSPITAL BOARD. ASSISTANT RADIOTHERAPIST (whole-time), Ipswich and East Suffolk Hospital. The department, which is about to have a Telecaesium Unit installed is the radiotherapy centre for the South East quadrant of the Region. Higher qualification and wide experience in specialty necessary. Salary scale £1575–£2025.

Applications (8 copies), stating age, experience, and the names of 3 referees, to the Board's Senior Administrative Medical Officer, 117, Chesterton-road, Cambridge, by 26th November, 1956. Candidates invited to visit Hospital by direct arrangement with Hospital Management Committee Secretary, Ipswich and East Suffolk Hospital (Anglesea Road Wing), Ipswich.

LEEDS REGIONAL HOSPITAL BOARD.

(*a*) Whole-time Locum ASSISTANT ANÆSTHETIST (Senior Hospital Medical Officer scale).

(*b*) Whole-time Locum ASSISTANT ORTHOPÆDIC SURGEON (Senior Hospital Medical Officer scale), Dewsbury and Leeds.

Applications, stating age, qualifications, and details of appointments held showing dates, together with the names and addresses of 3 referees, to the Secretary, Park-parade, Harrogate, not later than 23rd November, 1956.

LIVERPOOL REGIONAL HOSPITAL BOARD. Whole-time Locum Tenens ANÆSTHETIST (Consultant) required until 31st March, 1957, with duties mainly at St. Catherine's Hospital, Birkenhead, and some duties in the Birkenhead and North Wirral Group.

Forms of application from, and to be returned to, Dr. T. Lloyd Hughes, Senior Administrative Medical Officer, Liverpool Regional Hospital Board, 19, James-street, Liverpool, 2, to be received not later than 8th December, 1956.

VINCENT COLLINGE, Secretary to the Board.

CHELMSFORD, ESSEX. BROOMFIELD HOSPITAL. Required experienced Locum Tenens SENIOR HOSPITAL MEDICAL OFFICER for long period, full residence or only when on duty. Unit has 330 Beds for the treatment of pulmonary tuberculosis in adults. Tuberculous and non-tuberculous thoracic surgery, chest clinic, and mass radiography.

Apply Physician-Superintendent.

MANCHESTER REGIONAL HOSPITAL BOARD.

(*a*) Maximum Part-time CONSULTANT ANÆSTHETIST to the Bolton and District Hospital Centre (Bolton Royal Infirmary, 237 Beds; Bolton District General Hospital, 604 Beds, &c.). Wide experience and higher qualifications essential, appointee to live in area. 4th December, 1956.

(*b*) 2 Whole-time RESIDENT ASSISTANT PSYCHIATRISTS (Senior Hospital Medical Officer):—

(i) Lancaster Moor Hospital (2500 Beds), near Lancaster. Good accommodation.

(ii) Deputy Medical Superintendent, Springfield Hospital, Manchester—800 Beds. Temporary accommodation available in Hospital flat, modern detached house now nearing completion.

All modern forms of treatment undertaken at both hospitals. Candidates should have good experience in psychiatry and possess the D.P.M. 3rd December, 1956.

Application forms from the Senior Administrative Medical Officer to the Board, Cheetwood-road, Manchester, 8, to be returned by dates stated.

MANCHESTER. UNITED MANCHESTER HOSPITALS. MANCHESTER ROYAL EYE HOSPITAL. Applications are invited for the post of Part-time (9 sessions) SENIOR HOSPITAL MEDICAL OFFICER (non-resident). Previous experience in ophthalmology essential. The terms and conditions of service for hospital medical and dental staffs will apply.

Applications, giving details of past experience and qualifications, together with the names of 3 referees, to be addressed to the undersigned as early as possible. (Special application forms can be obtained on request.)

F. J. CABLE, Secretary, United Manchester Hospitals.

The Lodge, Oxford-road, Manchester, 13.

NEWCASTLE REGIONAL HOSPITAL BOARD. ST. LUKE'S HOSPITAL, MIDDLESBROUGH. Locum Tenens PSYCHIATRIST (Senior Hospital Medical Officer), whole-time, for approximately 2 months.

Applications, with names and addresses of 3 referees, to Regional Psychiatrist, Benfield-road, Newcastle upon Tyne, 6, immediately.

NEWCASTLE REGIONAL HOSPITAL BOARD. Cherry KNOWLE HOSPITAL, RYHOPE, SUNDERLAND. (850 Beds.) ASSISTANT PSYCHIATRIST (Senior Hospital Medical Officer) whole-time. Candidates should normally hold a D.P.M., but applications will be considered from candidates with no previous practical experience in psychiatry who hold a higher medical qualification, have had wide experience in general medicine, including Senior Registrar posts, and intend to obtain a D.P.M and specialise in psychiatry. The appointment is resident or non-resident. A small flat is available. If non-resident the successful candidate will be required to reside in close proximity to the Hospital. Full particulars from Regional Psychiatrist.

Applications, together with names and addresses of 3 referees, to be sent to the Regional Psychiatrist, Benfield-road, Newcastle upon Tyne, 6, within 28 days.

OXFORD REGIONAL HOSPITAL BOARD. Locum CONSULTANT RADIOLOGIST to Northampton/Kettering Group, full-time if possible. Available now, for minimum of 3 months pending advertisement of permanent appointment.

Full details, qualifications, experience, and names of 2 referees, to the Secretary, 43, Banbury-road, Oxford.

SCOTLAND. SOUTH-EASTERN REGIONAL HOSPITAL BOARD. Whole-time PSYCHIATRIST (Senior Hospital Medical Officer) to Dingleton Mental Hospital, Melrose. Single accommodation is available.

Apply, giving age, qualifications, and previous experience, and the names of 3 referees, to the Secretary, 11, Drumsheugh-gardens, Edinburgh, 3, by 8th December, from whom further particulars may be obtained.

SOUTH-WESTERN REGIONAL HOSPITAL BOARD. Appointment of Medical Superintendent to Roundway Hospital, Devizes. Applications are invited for the whole-time appointment of CONSULTANT PSYCHIATRIST in the Bath Clinical Area which comprises Bath, North East Somerset, Mid and West Wilts. This post becomes vacant on 1st April, 1957. Applicants must possess a higher qualification. The successful candidate will have charge of beds at Roundway Hospital, Devizes, and will act as Medical Superintendent of this Hospital; in addition, he will be required to visit other hospitals in the clinical area as determined by the Regional Board from time to time. Accommodation will be available.

Applications (12 copies), stating date of birth, qualifications and experience, together with the names and addresses of 2 referees, should be sent to the Secretary of the Regional Hospital Board, 27, Tyndalls Park-road, Bristol, 8, not later than 8th December, 1956.

SOUTH-WESTERN REGIONAL HOSPITAL BOARD. TONE VALE HOSPITAL, near TAUNTON. Applications are invited for the appointment of ASSISTANT PSYCHIATRIST at Tone Vale Hospital, near Taunton, which contains approximately 1200 Beds. The appointment will be on a whole-time basis in the Senior Hospital Medical Officer grade. Applicants should possess the Diploma in Psychological Medicine, and previous experience of the diagnosis and treatment of mental diseases is essential. The successful candidate will work under the general direction of the Medical Superintendent.

Applications (12 copies), stating date of birth, qualifications and experience, together with the names and addresses of 2 referees, should be sent to the Secretary of the Regional Hospital Board, 27, Tyndalls Park-road, Bristol, 8, not later than 8th December, 1956.

DUBLIN. ST. LAURENCE'S HOSPITAL (Richmond). Applications are invited for the post of SECOND ASSISTANT to the Neurosurgical Department (whole-time). Salary £1500 p.a. The appointment will be for 3 years, subject to re-election at the end of the first and second years. On re-election after 3 years service the position will be permanent and will include the privilege to engage in private neurosurgical practice.

Applications, accompanied by the names of 3 referees, should reach the undersigned on or before 30th November, 1956. Conditions of appointment may be obtained on request.

A. W. MACDERMOTT, Secretary and Superintendent.

NORTHERN IRELAND HOSPITALS AUTHORITY. Applications are invited for a whole-time post as CONSULTANT CLINICAL PATHOLOGIST with headquarters at a new laboratory which is shortly to open at Lurgan and Portadown Hospital, Lurgan. The successful applicant will be responsible for providing a pathological service to hospitals in North Armagh and adjoining areas. The terms and conditions of the appointment will be in accordance with the Authority's application to Northern Ireland of the Spens report.

Application to be made on a form obtainable (with further particulars) from the Secretary, Northern Ireland Hospitals Authority, 44–46, Queen-street, Belfast, and to be returned so as to be received not later than 30th November, 1956.

NEW ZEALAND. MARLBOROUGH HOSPITAL BOARD. Applications are invited for position of Whole-time RADIOLOGIST (Junior or Senior Specialist) at Wairau Hospital, Blenheim, New Zealand (171 Beds). Reasonable travelling costs refunded.

Further details available from New Zealand House, London, W.C.2.

Hospital Services : Junior Appointments

CONNAUGHT HOSPITAL, Walthamstow, E.17. (118 Beds.) HOUSE SURGEON required for 6 months (General Surgery and Special Departments). Post vacant 1st December, 1956. Recognised for F.R.C.S.

Applications, with full details and copies of 2 recent testimonials, should be sent immediately to Secretary, Hospital Management Committee, Forest Group, Langthorne-road, E.11.

GUY'S HOSPITAL, S.E.1. Applications are invited for the post of REGISTRAR to the Endocrine Department with attendance on 6 sessions per week. Duties to start as soon as possible until 30th September, 1957.

Forms of application are obtainable from, and should be lodged with, the Superintendent, Guy's Hospital, S.E.1, not later than 22nd November, 1956.

HACKNEY HOSPITAL, London, E.9. (General—841 Beds.) Applications for the 6 months resident appointment of CASUALTY OFFICER AND E.N.T. HOUSE SURGEON (House Officer grade) should be sent immediately to the Secretary, above address, quoting HH/CHO.

HACKNEY HOSPITAL, London, E.9. (General—841 Beds.) Applications are invited for the 12 months resident appointment, vacant 19th December, of SENIOR HOUSE OFFICER (obstetrics and gynæcology). Post recognised for M.R.C.O.G.

Apply (Group Secretary, above address, by 24th November, quoting HH/SHO.O.

HACKNEY HOSPITAL, London, E.9. (General—841 Beds.) Applications for the 6-months resident appointment of Pre-registration HOUSE PHYSICIAN (first post) should be sent to Secretary, above address, by 30th November, quoting HH/HP.

HOSPITAL OF ST. JOHN AND ST. ELIZABETH, 60, Grove End-road, London, N.W.8. Applications are invited from pre-registration or registered medical practitioners (Male) for the appointment of HOUSE SURGEON to the Midwifery and Gynæcological Departments, to become vacant on Monday, 10th December, 1956. Appointment will be for a period of 6 months. National Health Service salary.

Applications to reach the Secretary on or before Friday, 30th November, 1956, together with copies of 3 recent testimonials.

LEWISHAM HOSPITAL, London, S.E.13. Applications are invited for the post of SENIOR HOUSE OFFICER (orthopædics), vacant 1st December and recognised for 6 months training for F.R.C.S. Salary £745 p.a., less £150 for residential emoluments.

Applications, stating age, qualifications and experience, with copy testimonials or names of referees, to Group Secretary, Lewisham Hospital, S.E.13.

MIDDLESEX HOSPITAL, W.1. Applications invited for posts of:—

SENIOR HOUSE OFFICER in Anæsthetics.

JUNIOR RESIDENT ASSISTANT ANÆSTHETIST (graded as House Officer).

Vacant 1st February.

Forms of application obtainable from Deputy Superintendent should be returned, naming 2 referees, by 6th December.

MIDDLESEX HOSPITAL, W.1. Applications invited for post of SENIOR HOUSE OFFICER at St. Luke's-Woodside Hospital, N.10. This is the Inpatient Department of psychological medicine of the Middlesex Hospital and is recognised for part of the training for the D.P.M. examination.

Forms of application obtainable from Deputy Superintendent, The Middlesex Hospital, should be returned, naming 2 referees, by 6th December.

METROPOLITAN HOSPITAL, Kingsland-road, London, E.8. (General—146 Beds.) Applications are invited from registered medical practitioners for the post of RESIDENT SENIOR HOUSE OFFICER (casualty), vacant 6th February, 1957. Post recognised for F.R.C.S.

Applications, stating age, nationality, qualifications and experience, together with 3 testimonials, to the Hospital Secretary by 14th December, 1956.

METROPOLITAN HOSPITAL, Kingsland-road, London, E.8. (General—146 Beds.) Applications are invited from registered medical practitioners for the post of RESIDENT SENIOR HOUSE OFFICER (Anæsthetist), vacant 11th January, 1957.

Applications, stating age, nationality, qualifications and experience, together with 3 testimonials, to the Hospital Secretary by 14th December, 1956.

METROPOLITAN HOSPITAL, Kingsland-road, London, E.8. (General—146 Beds.) Applications are invited for the pre-registration posts of 2 HOUSE PHYSICIANS and 3 HOUSE SURGEONS, vacant 1st January, 1957.

Applications, stating age, nationality, qualifications or probable date of qualifications, and experience, with copies of 3 recent testimonials, to the Hospital Secretary by 14th December, 1956.

MILE END HOSPITAL Bancroft-road, London, E.1. (484 Beds.) HOUSE PHYSICIAN (pre- or post-registration). Post vacant immediately.

Application forms, obtainable from Physician-Superintendent, should be returned by 23rd November, 1956, with copies of not more than 3 testimonials.

NATIONAL HEART HOSPITAL, Westmoreland-street, W.1 (with which is associated the Institute of Cardiology). Applications are invited for the post of ASSISTANT RESIDENT MEDICAL OFFICER (Male). The appointment is for a period of 6 months from 1st January, 1957, but may be renewed for a further period of 6 months. The status and salary are those of a Senior House Officer and are in accordance with the national terms and conditions of service.

Applications, with copies of 3 recent testimonials, should be sent to me not later than Saturday, 24th November, 1956.

ROBERT G. E. WHITNEY, Secretary to the Board.

NORTH EAST METROPOLITAN REGIONAL HOSPITAL BOARD.

REGISTRAR in Ophthalmology (non-resident), Southend General Hospital, Southend-on-Sea, Essex. Vacant 15th January. Excellent opportunities for clinical and surgical experience in 19 bed unit. Recognised for F.R.C.S. and D.O.

SURGICAL REGISTRAR (resident), Essex County Hospital, Colchester, Essex. Recognised for F.R.C.S.

SURGICAL REGISTRAR (resident or non-resident near Hospital), King George Hospital, Ilford, Essex. Orthopædic experience essential.

REGISTRAR in Obstetrics and Gynæcology (resident), Ilford and Barking Group of hospitals, Ilford, Essex.

GERIATRIC REGISTRAR (non-resident), Whipps Cross Hospital, London, E.11. Post offers excellent scope. Modern methods of geriatric treatment are employed supervised by a Consultant Geriatrician with full consultant services in other branches.

ORTHOPÆDIC AND ACCIDENT REGISTRAR (resident or non-resident near hospital), St. Margaret's Hospital, Epping, Essex. Recognised for F.R.C.S.

REGISTRAR in General Medicine and Infectious Diseases (resident), Rush Green Hospital, Romford, Essex.

Appointments subject to review after 1 year.

Application forms from Secretary, 11A, Portland-place, W.1, to be returned by 1st December, 1956.

NORTH MIDDLESEX HOSPITAL, Edmonton, N.18. RESIDENT HOUSE SURGEON (general, with some genito-urinary surgery). Applications are invited from pre-registration and registered medical practitioners. 6 months appointment, vacant 1st January, 1957. Recognised for F.R.C.S.

Applications (in own handwriting), stating age, nationality, qualifications, experience, with copies of recent testimonials, to Secretary of Hospital, by 26th November.

NORTH MIDDLESEX HOSPITAL, Edmonton, N.18. HOUSE PHYSICIAN, required for 6 months starting on 1st January, 1957. Recognised pre-registration appointment (first or second post). General medicine.

Applications (in own handwriting), stating age, nationality, qualifications, experience, with copies of recent testimonials, to Secretary of Hospital, by 27th November.

NORTH MIDDLESEX HOSPITAL AND EDMONTON CHEST CLINIC, London, N.18. SENIOR HOUSE OFFICER (tuberculosis), resident, required, for 1st January, 1957. Appointment for 6 months in the first instance with possible extension to 1 year. Duties at the above Hospital and Clinic under the direction of the Chest Physician. Further details on request.

Applications (in own handwriting), stating age, nationality, qualifications, experience, with copies of recent testimonials and/or names of 2 referees, to Secretary of Hospital, by 27th November.

PRINCE OF WALES'S GENERAL HOSPITAL, N.15. (248 Beds.) Applications are invited from qualified medical practitioners for appointment as RESIDENT JUNIOR HOUSE SURGEON for casualty (pre-registration first or second post) for a period of 6 months, vacant 1st December, 1956.

Applications to Group Secretary, Tottenham Group Hospital Management Committee (Group 4), The Green, N.15, by 24th November, 1956.

QUEEN ELIZABETH HOSPITAL FOR CHILDREN MANAGEMENT COMMITTEE, Hackney-road, E.2, Shadwell, E.1, and **BANSTEAD WOOD, SURREY.** HOUSE OFFICER. Appointment will be made for 2 consecutive periods of 6 months commencing 1st December, 1956. First period as House Physician and second as House Surgeon and Casualty Officer.

Application forms from the Secretary at Hackney-road, returnable with copies of not more than 3 testimonials on or before 1st December, 1956.

ROYAL NORTHERN HOSPITAL, Holloway, London, N.7. HOUSE PHYSICIAN (post or pre-registration) required early January.

Applications, with copies of recent testimonials, to be sent to the Hospital Secretary by 27th November, 1956.

ROYAL NORTHERN HOSPITAL, Holloway, N.7. North WEST METROPOLITAN REGIONAL HOSPITAL BOARD. REGISTRAR in Radiology, X-ray Diagnostic Department, required at above Hospital. D.M.R.D. essential. Hospital may be visited by direct appointment.

Application forms obtainable from, and returnable to, the Secretary, Royal Northern Hospital, Holloway-road, London, N.7, by 27th November, 1956.

ROYAL NATIONAL THROAT, NOSE AND EAR HOSPITAL AND INSTITUTE OF LARYNGOLOGY AND OTOLOGY, Gray's Inn-road, W.C.1, and Golden-square, W.1. Applications are invited for a post of SENIOR REGISTRAR with effect from 1st January, 1957. The appointment will be for an initial period of 1 year, subject to annual re-election thereafter up to the maximum permissible term in this grade, and otherwise in accordance with the terms and conditions of service in the National Health Service. Applicants must have had considerable experience in general surgery and in this specialty and hold a higher surgical qualification.

Applications should give full information as to qualifications and experience, and the names of 2 referees, and be sent in duplicate to the House Governor before 3rd December.

ROYAL FREE HOSPITAL. Applications are invited for the post of Locum SENIOR RESIDENT MEDICAL OFFICER at the Royal Free Hospital, Gray's Inn-road, as from 1st January, 1957. Terms and conditions of service in accordance with those laid down by the Ministry of Health for locum Junior Hospital Medical Officers.

Application forms may be obtained from the Secretary, Royal Free Hospital, Gray's Inn-road, W.C.1, to whom they should be returned not later than 30th November, 1956.

SOUTH LONDON HOSPITAL FOR WOMEN AND CHILDREN, Clapham Common, S.W.4. Applications are invited from pre-registration and registered Female medical practitioners for the appointment of OBSTETRIC HOUSE SURGEON. Recognised for the M.R.C.O.G. Appointment is for 6 months from 22nd December, 1956.

Forms of application from the Secretary.

SOUTH LONDON HOSPITAL FOR WOMEN AND CHILDREN, Clapham Common, S.W.4. Applications are invited from pre-registration and registered Female medical practitioners for the appointment of GYNÆCOLOGICAL HOUSE SURGEON, vacant 20th December, 1956, for 6 months. Recognised for the M.R.C.O.G.

Application forms from the Secretary.

SOUTH LONDON HOSPITAL FOR WOMEN AND CHILDREN, Clapham Common, S.W.4. Applications are invited from pre-registration and registered Female medical practitioners for the appointment of HOUSE SURGEON, vacant 22nd December, 1956, for a period of 6 months. Recognised for F.R.C.S.

Forms of application from the Secretary.

ST. ANDREW'S HOSPITAL, Bow, E.3. House Surgeon (obstetrics and gynæcology), pre-registration post, commencing 3rd January, 1957.

Applications, with copy of at least 1 testimonial, should be sent to Hospital Secretary immediately.

ST. GILES' HOSPITAL, Camberwell, S.E.5. Applications invited for appointment as SENIOR HOUSE OFFICER (Anæsthetist duties). Post vacant 1st January, 1957. Recognised for F.F.A.R.C.S. and D.A.

Applications, stating age, qualifications and previous posts, with copy testimonials or names of referees, to Group Secretary, Camberwell Hospital Management Committee, Dulwich Hospital, East Dulwich-grove, S.E.22, not later than 28th November.

ST. GILES' HOSPITAL, Camberwell S.E.5. Applications invited for appointment as SENIOR HOUSE OFFICER (casualty duties). Post vacant 10th January, 1957. Recognised for F.R.C.S.

Apply, giving age and details of qualifications and experience, with copy testimonials or names of 2 referees, to Group Secretary, Camberwell Hospital Management Committee, Dulwich Hospital, East Dulwich-grove, S.E.22, not later than 28th November.

ST. JAMES' HOSPITAL, Balham, London, S.W.12. SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. REGISTRAR in Physical Medicine required.

Application forms obtainable from the Group Secretary Wandsworth Hospital Group, at above address. (42770.)

ST. JAMES' HOSPITAL, Balham, S.W.12. Locum REGISTRAR (E.N.T.) required, 28th November–11th December.

Applications, with full particulars, including names of 2 referees, to Group Secretary at above address. (42795.)

ST. LEONARD'S HOSPITAL Nuttall-street London N.1. (Acute General—192 Beds.) Applications are invited from registered or provisionally registered medical practitioners for the post of HOUSE SURGEON.

Applications, with copies of 2 testimonials, to the Hospital Secretary by 1st December, 1956.

ST. THOMAS'S HOSPITAL, London, S.E.1. Applications are invited from fully registered medical practitioners for the following resident appointments :—

SENIOR MEDICAL CASUALTY OFFICER AND RESIDENT PATHOLOGIST (Senior House Officer grade).

SENIOR SURGICAL CASUALTY OFFICER (Senior House Officer grade).

SENIOR HOUSE OFFICER or HOUSE OFFICER to the Thoracic Surgical Unit (grade according to qualifications and experience).

HOUSE PHYSICIAN to the Children's Department.

HOUSE PHYSICIAN to the Department of Psychological Medicine.

HOUSE PHYSICIAN, Departments of Neurology and Thoracic Medicine.

All for 6 months from 12th February, 1957.

Applications, naming 2 referees, to the Clerk of the Governors by 1st December, 1956.

ST. MARY'S HOSPITAL, Paddington, W.2. Applications are invited for the post of SENIOR REGISTRAR to the Almroth Wright Ward. The duties of the post require that 6 notional half-days should be devoted to the clinical charge of the 17 beds of the Wright Fleming Institute, together with some laboratory work in connection with cases in the Wards. The remaining 5 notional half-days to be devoted to research work in the Wright Fleming Institute of Microbiology. Some previous laboratory experience is desirable. The appointment will be for a period of 12 months, as from a date to be arranged. The grading of the post is Senior Registrar and payment will be made by the Board of Governors for 6 notional half-days ; payment for the remaining 5 notional half-days will be made by the Wright Fleming Institute. The total salary, therefore, will be equivalent to a whole-time Senior Registrar appointment.

Applications, stating nationality, date of birth, permanent address, qualifications with dates and details of previous and present appointments, with gradings, together with the names and addresses of 3 referees, should reach ALAN POWDITCH, House Governor, not later than 27th November, 1956.

ST. MARY'S HOSPITAL, W.2. Applications are invited for the post of RESIDENT CLINICAL PATHOLOGIST for a period of 12 months. The successful candidate will be required to take up his duties as soon as possible. Applicants should have held 2 House Officer appointments at this Hospital or another hospital approved by the Board of Governors and preference will be given to those intending to specialise in pathology.

Applications, stating nationality, date of birth, permanent address, qualifications with dates, details and National Health Service gradings of previous and present appointments, together with the names and addresses of 3 referees, should reach ALAN POWDITCH, House Governor, not later than 27th November, 1956.

ST. STEPHEN'S HOSPITAL, Fulham-road, Chelsea, S.W.10. SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. REGISTRAR (non-resident), general and thoracic medicine (including cardiology and tuberculosis).

Application forms (not later than 14 days from date of advertisement) from Group Secretary, St. Luke's Hospital, Chelsea, S.W.3. Enclose foolscap stamped addressed envelope.

UNIVERSITY COLLEGE HOSPITAL, Gower-street, W.C.1. RESIDENT MEDICAL OFFICER (Registrar) at the Hospital for Tropical Diseases, 4, St. Pancras-way, London, N.W.1, vacant 1st January, 1957. Appointment for 6 months (renewable).

Applications, with names of 2 referees, to Administrator and Secretary by 26th November, 1956.

UNIVERSITY COLLEGE HOSPITAL, Gower-street, W.C.1. Applications are invited for the post of SENIOR SURGICAL REGISTRAR for 1 year only from 1st January, 1957.

Applications, with names of 2 referees, to Administrator and Secretary by 26th November, 1956.

WEST LONDON HOSPITAL, Hammersmith-road, London, W.6. Whole-time NON-RESIDENT REGISTRAR (orthopædics) required as soon as possible.

Applications, stating age, qualifications, experience, names of 2 referees, to Secretary, Board of Governors, The Hammersmith, West London, and St. Mark's Hospitals, Ducane-road, W.12, by 24th November.

WHIPPS CROSS HOSPITAL, London, E.11. Applications are invited for the post of Pre-registration HOUSE SURGEON (Gynæcology and Urology Department) which becomes vacant 1st January, 1957.

Application forms from the Hospital Secretary to be returned by 28th November, 1956.

WILLESDEN GENERAL HOSPITAL, Harlesden-road, N.W.10. RESIDENT HOUSE SURGEON required 15th December, plus 14 days locum from 1st December. Pre-registration candidates eligible.

Applications, including names of 2 referees, to Hospital Secretary, by 21st November.

WOOLWICH GROUP HOSPITAL MANAGEMENT COMMITTEE. HOUSE PHYSICIANS. 5 posts vacant in January, 3 at Brook General Hospital, Woolwich, 2 at St. Nicholas Hospital, Plumstead. All posts approved for Pre-registration Service.

Applications to Group Secretary, Memorial Hospital, Woolwich, S.E.18, not later than 1st December.

ALTON, HAMPSHIRE. LORD MAYOR TRELOAR ORTHOPÆDIC HOSPITAL. (340 Beds—Adults and Children.) SENIOR ORTHOPÆDIC REGISTRAR wanted, whole-time, resident. Post available for 1 year and is approved by the British Postgraduate Medical Federation to give Senior Orthopædic Registrars an opportunity of spending 1 year in an active Orthopædic Hospital with many long-stay orthopædic patients. Attendance necessary at peripheral clinics. Quarters for a single man ; unfurnished 3-bedroom house for married man. Canvassing disqualifies but visit to Hospital (by appointment) welcomed.

Application form from Secretary.

ASHFORD HOSPITAL, Ashford, Middlesex. Staines GROUP HOSPITAL MANAGEMENT COMMITTEE. Required, RESIDENT HOUSE SURGEON (Male) for Traumatic and Orthopædic Unit on 11th December, 1956. 6 months appointment suitable for pre-registration candidates.

Applications, stating age, qualifications and experience, with copies of up to 3 recent testimonials, to Medical Director of Hospital.

BEDFORD (near). BROMHAM HOSPITAL. (434 Beds for mental defectives and 60 at Annexe near Sandy.) REGISTRAR in Psychiatry required (resident). Hospital may be visited by direct appointment with the Medical Superintendent (phone : Oakley 295).

Application forms obtainable from, and returnable to, Secretary, Bedford Group Hospital Management Committee, 3, Kimbolton-road, Bedford.

BEDFORD GENERAL HOSPITAL. (439 Beds.) House SURGEON required. Pre- or post-registration. Recognised for F.R.C.S. Post offers exceptional opportunities for general experience in busy acute Surgical Unit.

Inquiries and applications, with copies of 2 recent testimonials, to Group Secretary, 3, Kimbolton-road, Bedford.

BEDFORD GENERAL HOSPITAL. (439 Beds.) 2 Resident Pre-registration HOUSE PHYSICIANS required, 1 end November, 1 beginning December.

Applications, stating age, qualifications, experience, copies of 2 recent testimonials, to Group Secretary, Bedford Group Hospital Management Committee, 3, Kimbolton-road, Bedford.

BEDFORD GENERAL HOSPITAL. (439 Beds.) House SURGEON (mainly orthopædic). Pre- or post-registration ; recognised for F.R.C.S. Required immediately. Post offers exceptional opportunities for general experience in busy acute surgical units.

Inquiries and applications, with copies of 2 recent testimonials, to Group Secretary, 3, Kimbolton-road, Bedford.

BIRMINGHAM ACCIDENT HOSPITAL, Bath-row, BIRMINGHAM, 15. (215 Beds and 8 House Surgeons.) HOUSE SURGEON (resident), vacant now. Recognised for purpose of casualty by R.C.S.(Eng.). Teaching programme by Consultant staff. Appointment for 6 months, some of which may be spent at applicant's request in 42-Bedded Medical Research Council's Burns Unit.

Apply, naming 2 referees, to Administrator.

BIRMINGHAM AND MIDLAND EAR AND THROAT HOSPITAL, Edmund-street, BIRMINGHAM, 3. HOUSE OFFICER (including pre-registration) required.

Apply to Group Secretary, Dudley Road Hospital, Birmingham, 18.

BIRMINGHAM REGIONAL HOSPITAL BOARD.

(1) **Mid-Worcester Group, Birmingham-road, Bromsgrove**

REGISTRAR (obstetrics/gynæcology). Duties at Bromsgrove General Hospital (423 Beds) (7 notional half-days) and Dudley and Stourbridge Group (4 notional half-days).

(2) **Dudley Stourbridge Group, The Guest Hospital, Dudley**

REGISTRAR (general surgery) at The Corbett Hospital, Stourbridge (114 Beds). Experience specialty essential, higher qualification desirable. Resident. Post vacant January, 1957.

(3) **Birmingham Group 25, Oak Tree-lane, Birmingham, 29**

REGISTRAR (general surgery), resident. Duties at Solihull and Little Bromwich General Hospitals. Higher qualification desirable. Residential married quarters available.

(4) **West Bromwich Group (No. 18), Edward-street, West Bromwich**

REGISTRAR (general surgery) at West Bromwich and District General Hospital (144 Beds). Recognised for F.R.C.S. Resident. Married quarters available. Higher qualification an advantage.

Application forms from Group Secretaries to be returned by 26th November, 1956.

BIRMINGHAM. THE SKIN HOSPITAL, Inpatients' DEPARTMENT, George-road, BIRMINGHAM, 15. SENIOR HOUSE OFFICER or HOUSE OFFICER according to experience. Modern well-equipped Inpatients Department, providing facilities for study of skin diseases. Required to assist Consultant at outpatient clinics.

Applications, with copies of 2 recent testimonials, to Group Secretary, Dudley Road Hospital, Birmingham, 18.

BIRMINGHAM, 9. YARDLEY GREEN HOSPITAL. THORACIC SURGICAL UNIT. (66 Beds.) Vacancy for SENIOR HOUSE OFFICER. No previous experience in thoracic surgery necessary.

Applications, stating age, qualifications, training, and experience, together with names of 2 referees, to be addressed to Group Secretary, Yardley Green Hospital, Birmingham, 9.

BIRMINGHAM, 18. DUDLEY ROAD HOSPITAL. (780 Beds.) SENIOR HOUSE OFFICER (Casualty Department) required (40,000 attendances per year). Resident or non-resident. Recognised for F.R.C.S. Tenable for 6 or 12 months. Vacant 18th December, 1956.

Applications, with copies of 3 recent testimonials, to Group Secretary.

BOURNEMOUTH (near). CHRISTCHURCH HOSPITAL, CHRISTCHURCH, HAMPSHIRE. BOURNEMOUTH AND EAST DORSET HOSPITAL MANAGEMENT COMMITTEE. HOUSE PHYSICIAN (pre-registration Intern) required for general medicine for post becoming vacant on 15th December, 1956, at the above Hospital of 259 Beds (including 79 acute medical, 34 pædiatric, 6 chest diagnostic and a geriatric unit). Duties also include attendance at outpatient clinics at the Royal Victoria Hospital, Boscombe, Bournemouth.

Applications, with copies of testimonials, to the Hospital Secretary at the Hospital.

BRIGHTON GENERAL HOSPITAL. Applications are invited for the appointment of HOUSE SURGEON (recognised for F.R.C.S.) to the General Surgical Unit (60 Beds). The post will be vacant on 17th December, 1956. Salary in accordance with national scale. The post is recognised as a pre-registration appointment.

Applications, stating age, qualifications, experience, and giving the names of 2 referees, should be sent to the Physician-Superintendent, Brighton General Hospital, Elm-grove, Brighton, 7.

BRIGHTON. ROYAL SUSSEX COUNTY HOSPITAL. (312 Beds.) HOUSE SURGEON (including gynæcology) required beginning of January. Pre-registration and recognised for F.R.C.S.

Applications, stating usual particulars, and naming 2 referees, to the Administrative Officer, Royal Sussex County Hospital, Brighton, 7.

BRISTOL (near). HAM GREEN HOSPITAL, Pill, near BRISTOL. Applications are invited for the post of JUNIOR HOSPITAL MEDICAL OFFICER in the Tuberculosis Wards of the above Hospital. The Hospital is fully equipped for modern treatment of pulmonary tuberculosis, including regular major thoracic surgery; opportunities also for work in the Bristol Chest Clinic. Appointment for 1 year, renewable. Post now vacant.

Applications, with testimonials or names of referees, should be sent to the Hospital Secretary, Ham Green Hospital, Pill, near Bristol.

BRISTOL. SOUTHMEAD GENERAL HOSPITAL GROUP MANAGEMENT COMMITTEE. Applications are invited for the following appointments which will become vacant on 1st February, 1957 :—

Southmead Hospital, Bristol (570 Beds including 133 maternity)

1 SENIOR HOUSE OFFICER (medical), with duties as Senior Resident Officer.

2 SENIOR HOUSE OFFICERS (pathology), general experience in clinical pathology, including blood-transfusion duties.

1 SENIOR HOUSE OFFICER (casualty) (will also have duties as E.N.T. House Surgeon). Post recognised for F.R.C.S. examination.

1 HOUSE OFFICER (casualty) (will also have duties as E.N.T. House Surgeon). Post recognised for F.R.C.S. examination.

3 HOUSE SURGEONS. Posts recognised for F.R.C.S. examination.

4 HOUSE PHYSICIANS.

1 HOUSE SURGEON (gynæcology.) Post recognised for M.R.C.O.G. examination.

3 HOUSE OFFICERS (obstetrics). Posts recognised for M.R.C.O.G. examination.

2 HOUSE PHYSICIANS (pædiatrics). Posts recognised for D.C.H.

Mortimer House Maternity Hospital, Clifton, Bristol (35 Beds)

1 SENIOR HOUSE OFFICER (obstetrics).

Applications are also invited for 1 HOUSE OFFICER (obstetrics) at Southmead Hospital for 6 months commencing 1st May, 1957; and 1 SENIOR HOUSE OFFICER (urology) at Southmead Hospital from 1st January, 1957. Post recognised for F.R.C.S. examination.

Applications, on forms to be obtained from the undersigned, to be returned not later than 3rd December, 1956.

C. C. HANCOCK, Group Secretary.

Southmead Hospital, Bristol.

BROMSGROVE GENERAL HOSPITAL, Worcestershire. (423 Beds.) HOUSE PHYSICIAN (pre-registration) required at the above Hospital. Post vacant January, 1957.

Applications, with the names of 3 referees, to the Hospital Secretary.

BROXBURN, WEST LOTHIAN. BANGOUR GENERAL HOSPITAL. PLASTIC SURGERY AND JAW INJURIES UNIT. Applications are invited for an appointment as HOUSE OFFICER in the Plastic Surgery and Jaw Injuries Unit of Bangour General Hospital, Broxburn, which is 15 miles from Edinburgh. Salary and conditions of service will be in accordance with the regulations.

Applications, giving age, qualifications and particulars of previous experience, if any, should be lodged with the Group Secretary and Treasurer, Board of Management, Bangour Hospital, Broxburn, West Lothian.

BURY ST. EDMUNDS. WEST SUFFOLK GENERAL HOSPITAL. (261 Beds.) Applications invited, with names of 3 referees, to Hospital Secretary by dates indicated.

(*a*) HOUSE OFFICER or SENIOR HOUSE OFFICER for orthopædic and casualty duties; recognised for F.R.C.S. (surgical); vacant late January; by 15th December. A Junior Hospital Medical Officer Casualty Officer is also in post.

(*b*) HOUSE SURGEONS for general surgical duties (recognised for F.R.C.S.); vacant early January; by 15th December.

(*c*) HOUSE SURGEON (gynæcological and obstetric duties); recognised for D.Obst.R.C.O.G.; vacant late January; by 15th December.

All posts except (*a*) as shown are recognised for pre-registration but for post (*c*) considered advisable to have held a previous post.

CARDIFF (near). CAERPHILLY DISTRICT MINERS HOSPITAL. (226 general beds.) SENIOR HOUSE OFFICER (general surgery). Married quarters may be available.

Apply to Group Secretary, Rhymney and Sirhowy Valleys Hospital Management Committee, Central Offices, Caerphilly-road, Ystrad Mynach, Hengoed, Glam.

CARDIFF. UNITED CARDIFF HOSPITALS (Llandough HOSPITAL) AND MEDICAL RESEARCH COUNCIL (PNEUMOCONIOSIS RESEARCH UNIT). Applications are invited for the post of REGISTRAR to spend part of his time in the Miners' Chest Diseases Treatment Centre at the above-mentioned Hospital and part in the Medical Research Council's Unit, where he will have an opportunity to assist with clinical trials. The Centre caters for all types of chest diseases.

Application forms can be obtained from the Secretary to the Board at Cardiff Royal Infirmary, Cardiff, and should be returned not later than 21st November.

CHERTSEY, SURREY. ST. PETER'S HOSPITAL (late Botleys Park War Hospital). (430 Beds.) ORTHOPÆDIC HOUSE SURGEON required immediately. 100 orthopædic beds. Senior House Officer or House Officer (intern grade). Post recognised for F.R.C.S. and Pre-registration Service. Preference given to provisionally registered candidates. Salary in accordance with terms and conditions of National Health Service.

Applications, together with names and addresses of referees, to be sent to the Physician-Superintendent, St. Peter's Hospital, Chertsey, as soon as possible.

CAMBRIDGE. ADDENBROOKE'S HOSPITAL. Non-RESIDENT REGISTRAR for Radiotherapy Department. Post now vacant.

Apply, with full particulars and names of 3 referees, to Secretary by 1st December.

CAMBRIDGE. ADDENBROOKE'S HOSPITAL. Senior REGISTRAR (Radiology—Diagnostic Department) required as soon as possible.

Apply, with full particulars and names of 3 referees, to Secretary by 8th December.

CAMBRIDGE. THE UNITED CAMBRIDGE HOSPITALS. The Board of Governors invites applications for appointment to the post of RESIDENT ASSISTANT SURGEON in the grade of Senior Registrar, vacant from 1st February, 1957. The holder will be resident at Addenbrooke's Hospital. In addition to clinical work, his duties will include general control, under the Consultant Staff, of all surgical beds, and responsibility for the general supervision of all members of the Resident Surgical Staff. The appointment is for 1 year in the first instance, reviewable annually.

Applications, stating age, and nationality, qualifications with dates and experience, with copies of 3 recent testimonials, to Secretary by 1st December.

CARLUKE, LANARKSHIRE. LAW HOSPITAL. Applications are invited for the post of JUNIOR HOSPITAL MEDICAL OFFICER (surgical). Salary and conditions of service in accordance with National Health Service scale.

Applications, stating age, qualifications and previous experience, together with the names of 2 referees, should be submitted to the Group Medical Superintendent, Law Hospital, Carluke.

CARSHALTON. QUEEN MARY'S HOSPITAL FOR CHILDREN. (853 Beds.) ORTHOPÆDIC REGISTRAR, with some surgical duties, required. Applicants are invited to visit the Hospital by appointment with the Physician-Superintendent.

Applications, which should be made on forms obtainable from the Group Secretary, should be returned by 1st December, 1956.

CHELMSFORD AND ESSEX HOSPITAL. (162 Beds.) Applications invited from pre-registration candidates, or others, for the post of HOUSE SURGEON. Recognised for F.R.C.S. Tenable for 6 months from 22nd November. The successful candidate will have the option of proceeding immediately to the post of House Physician for a further period of 6 months.

Applications, together with 2 recent testimonials, to the Secretary, Chelmsford Hospital Management Committee, London-road, Chelmsford.

CHICHESTER GROUP HOSPITAL MANAGEMENT COMMITTEE. RESIDENT ANÆSTHETIST SENIOR HOUSE OFFICER required for 6 months (renewable) from January, 1957. Group post; recognised for F.F.A.R.C.S. Work mainly at Royal West Sussex, St. Richard's and Bognor Hospitals. Salary £745, less £150 p.a. for residence.

Applications, with 2 referees names, to Group Secretary, 174, Broyle-road, Chichester, by 7th December.

CREWE AND DISTRICT MEMORIAL HOSPITAL. REGISTRAR (Orthopædic Department) required. Modern Theatres and Accident Department almost ready for occupation. Full traumatic and orthopædic service now being developed. Salary and conditions as per regulations.

Applications, stating age, qualifications and experience, together with names of 3 referees, to Group Secretary, South Cheshire Hospital Management Committee, Barony Hospital, Nantwich.

CROYDON. GENERAL HOSPITAL. (200 Beds.) Croydon GROUP HOSPITAL MANAGEMENT COMMITTEE. HOUSE PHYSICIAN (pre-registration) required from 5th December, 1956.

Application forms obtainable from GEORGE A. PAINES, Secretary, Hospital Management Committee, General Hospital, London-road, Croydon.

CROYDON. GENERAL HOSPITAL. House Surgeon (pre-registration) required. Post recognised for F.R.C.S.

Application forms obtainable from GEORGE A. PAINES, Group Secretary, Hospital Management Committee, General Hospital, London-road, Croydon, to be returned immediately.

CROYDON. MAYDAY HOSPITAL. (611 Beds.) Croydon GROUP HOSPITAL MANAGEMENT COMMITTEE. SENIOR HOUSE OFFICER (orthopædics) required as from 15th December. Previous experience in orthopædics desirable.

Application form obtainable from GEORGE A. PAINES, Secretary, Hospital Management Committee, General Hospital, London-road, Croydon.

CROYDON. QUEEN'S HOSPITAL. (450 Beds.) Geriatric UNIT. CROYDON GROUP HOSPITAL MANAGEMENT COMMITTEE. SENIOR HOUSE OFFICER (resident). Post vacant as from 24th November.

Application forms obtainable from GEORGE A. PAINES, Group Secretary, Hospital Management Committee, General Hospital, London-road, Croydon, to be returned within 14 days.

COVENTRY. GULSON HOSPITAL. House Officer (pædiatrics). Recognised D.C.H. Pre-registration. Vacant 1st January, 1957.

Apply Secretary, Group 20 Hospital Management Committee, Stoney Stanton-road, Coventry.

DRIFFIELD, YORKSHIRE. NORTHFIELD SANATORIUM. (78 Beds.) SENIOR HOUSE PHYSICIAN, vacant now. Offers experience all branches of tuberculosis within Group, including surgery, M.M.R., and clinics. Time for study. Ex-patients welcome. £150 for full residence.

Applications to Group Secretary, Westwood Hospital, Beverley, Yorkshire.

DERBY. DERBYSHIRE ROYAL INFIRMARY. Senior HOUSE OFFICER (orthopædic), vacant 1st December, 1956. Recognised for F.R.C.S.

Apply, stating full details, with copies of 2 recent testimonials, to Secretary.

DERBY. DERBYSHIRE ROYAL INFIRMARY (416 Beds), DERBY CITY HOSPITAL (260 Beds). (Post recognised for training for D.A. and F.F.A.R.C.S.) SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time RESIDENT REGISTRAR (anæsthetics) required for the above Hospitals. Duties also at other hospitals in the Group. This post offers special experience in neuro and orthopædic surgery and obstetrics. Appointment for 1 year in first instance.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 26th November, 1956, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

DENBIGH. THE NORTH WALES HOSPITAL FOR NERVOUS AND MENTAL DISORDERS. JUNIOR HOSPITAL MEDICAL OFFICER or SENIOR HOUSE OFFICER required. A house on the Hospital estate or single quarters available. The Hospital has modern treatment facilities, and is recognised by the Conjoint Board for the purpose of their D.P.M. examination.

Applications, with names of 2 referees, to the Medical Superintendent.

S. L. FROST, Secretary to the Management Committee.

DUDLEY, STOURBRIDGE AND DISTRICT HOSPITAL GROUP, BIRMINGHAM REGION.

The Guest Hospital, Dudley (154 Beds)

SENIOR HOUSE OFFICER (anæsthetics). Post now vacant.
HOUSE OFFICER (medical), pre-registration. Post vacant January, 1957.
HOUSE OFFICER (surgical), pre-registration. Post vacant January, 1957.

The Corbett Hospital, Stourbridge (114 Beds)

HOUSE OFFICER (surgical), pre-registration. Post vacant January, 1957.

Apply, Group Secretary, Guest Hospital, Dudley.

EAST ANGLIAN REGIONAL HOSPITAL BOARD. REGISTRAR in Psychiatry, Hellesdon Hospital, Norwich. Associated with this modern mental hospital (960 Beds) are a separate early treatment hospital with an Electro-encephalographic Department, outpatient clinics for both adults and children, and a special unit for the elderly mentally infirm. Post recognised for D.P.M. Self-contained flat available. Appointment for 1 year, renewable for second year.

Applications, stating age, experience, and the names of 3 referees, to Board's Senior Administrative Medical Officer, 117, Chesterton-road, Cambridge, by 26th November, 1956. Candidates are invited to visit Hospital by direct arrangement with the Medical Superintendent.

EDGWARE GENERAL HOSPITAL, Edgware, Middlesex. (715 Beds.) RESIDENT HOUSE PHYSICIAN for above Hospital. Post vacant 13th January, 1957. 6 months appointment.

Applications, stating age, qualifications, experience, and enclosing copies of up to 3 recent testimonials, to Medical Director of Hospital by 1st December, 1956.

EDGWARE GENERAL HOSPITAL, Edgware, Middlesex. 2 RESIDENT OBSTETRIC HOUSE SURGEONS for above Hospital. Posts vacant 28th December and 3rd January. 6 months appointments. Posts recognised for M.R.C.O.G. purposes.

Applications, stating age, qualifications, experience, and enclosing copies of up to 3 recent testimonials, to Medical Director of Hospital by 1st December, 1956.

EDINBURGH NORTHERN GROUP OF HOSPITALS. RESIDENT ANÆSTHETIST required for the Western General Hospital, commencing on 1st February, 1957. Salary scale £425–£525. This post is recognised for the Diploma in Anæsthetics.

Applications, giving names of 2 referees, to The Medical Superintendent, Western General Hospital, Edinburgh, 4.

EPSOM DISTRICT HOSPITAL, Dorking-road, Epsom, SURREY. RESIDENT HOUSE SURGEON required 11th December. Pre-registration post, recognised for F.R.C.S.

Applications, stating age, qualifications, and experience with copies of 2 recent testimonials, should be sent as soon as possible to Group Secretary at above address.

EPPING. ST. MARGARET'S HOSPITAL. House PHYSICIAN (pre-registration post) to Consultant in General Medicine. Post vacant 1st January, 1957.

Applications, with copies of testimonials, including 1 from medical school, to reach the Group Secretary, Epping Group Hospital Management Committee, "Oak Cottage," The Plain, Epping, Essex, by 23rd November, 1956.

EPPING. ST. MARGARET'S HOSPITAL. House SURGEON (pre- or post-registration) to very busy General Surgical Unit. Hospital within easy reach of Central London. Post vacant 1st January, 1957.

Applications, with copies of testimonials, including 1 from medical school, to reach the Group Secretary, Epping Group Hospital Management Committee, "Oak Cottage," The Plain, Epping, Essex, by 23rd November, 1956.

EPPING. ST. MARGARET'S HOSPITAL. Senior HOUSE OFFICER for tuberculosis wards, and to act as deputy Resident Anæsthetist in a busy general hospital. 40 tuberculosis beds in conjunction with chest clinic within Hospital grounds. Good experience of modern methods of treatment.

Applications, with references, to reach Group Secretary, Epping Group Hospital Management Committee, "Oak Cottage," The Plain, Epping, Essex, by 30th November, 1956.

EPPING. ST. MARGARET'S HOSPITAL. Senior House OFFICER (orthopædics) for orthopædics and casualty. Recognised training post for F.R.C.S. Salary on national scale, less deduction for board, lodging, &c.

Applications, with copies of 2 recent testimonials, to be sent immediately to the Group Secretary, Epping Group Hospital Management Committee, "Oak Cottage," The Plain, Epping, Essex.

ENFIELD, MIDDLESEX. CHASE FARM HOSPITAL. RESIDENT HOUSE PHYSICIAN (approved pre-registration), vacant 12th January, 1957. General medical duties. 6 months appointment.

Applications, with the names and addresses of 2 referees, to the Group Secretary, Enfield Group Hospital Management Committee, at Chase Farm Hospital, quoting reference "S," by 30th November, 1956.

ENFIELD, MIDDLESEX. CHASE FARM HOSPITAL. RESIDENT HOUSE PHYSICIAN (approved pre-registration), vacant 6th January, 1957. General medical duties. 6 months appointment.

Applications, with the names and addresses of 2 referees, to the Group Secretary, Enfield Group Hospital Management Committee, at Chase Farm Hospital, quoting reference "B," by 30th November, 1956.

ENFIELD, MIDDLESEX. CHASE FARM HOSPITAL. RESIDENT SENIOR HOUSE OFFICER required in the Department of Anæsthesia, vacant 16th January, 1957 (12 months appointment). The post is recognised for the D.A. and F.F.A.R.C.S. and affords a wide range of practical experience and tuition under Consultant supervision.

Applications, giving names and addresses of 2 referees, to the Group Secretary, Enfield Group Hospital Management Committee, at Chase Farm Hospital.

GLASGOW, S.W.1. SOUTHERN GENERAL HOSPITAL. JUNIOR HOSPITAL MEDICAL OFFICER required in Department of Anæsthesia. Salary scale £775–£50–£1075 p.a.

Applications, in writing, to the Group Medical Superintendent within 14 days of the appearance of this advertisement.

GLASGOW ROYAL INFIRMARY. Senior House Officer in Surgery. Duties at above Infirmary.

Write, giving 3 names for reference, not later than 24th November, 1956, to the Secretary, Board of Management for Glasgow Royal Infirmary and Associated Hospitals, 135, Buchanan-street, Glasgow, C.1.

HARTLEPOOLS HOSPITAL. Applications are invited for the resident post of SENIOR HOUSE SURGEON or HOUSE SURGEON (pre-registration). Recognised for F.R.C.S. Vacant mid-December.

Applications, stating age, nationality, and qualifications with dates, and accompanied by copies of 2 testimonials, should be sent to the Group Secretary, Hartlepools Hospitals Management Committee, at the General Hospital, West Hartlepool, as soon as possible.

HASTINGS. ROYAL EAST SUSSEX HOSPITAL. (150 Beds.) HOUSE PHYSICIAN (pre-registration post), offering good experience, vacant early December.

Apply to Hospital Administrator.

HEMEL HEMPSTEAD, HERTFORDSHIRE. WEST HERTS HOSPITAL. CASUALTY OFFICER (Junior Hospital Medical Officer) required.

Applications, stating 2 names for reference, should be sent to the Hospital Secretary.

HERTFORD COUNTY HOSPITAL. (171 Beds. Hospital situated 21 miles from London.) Applications are invited for appointment of RESIDENT HOUSE PHYSICIAN (Male or Female), second post held. Recognised pre-registration post. 6 months appointment. Preference given to applicants who have held resident surgical or medical posts in general hospital. Duties to commence 3rd December, 1956.

Applications to Group Secretary, Hertford Hospital Management Committee, County Hospital, Hertford, Herts.

HERTFORD COUNTY HOSPITAL. (171 Beds. Hospital situated 21 miles from London.) RESIDENT CASUALTY OFFICER (Senior House Officer grade) with attachment to Pædiatrician and Ophthalmic Consultant. Salary £745 p.a., less £150 p.a. residential emoluments. Recognised under F.R.C.S. regulations. Appointment to commence 1st December, 1956.

Apply, with full details and references, to Group Secretary, Hertford Hospital Management Committee, County Hospital, Hertford, Herts.

HILLINGDON HOSPITAL, Uxbridge, Middlesex. (621 Beds.) HOUSE SURGEONS required in General Surgery (general and traumatic; general and gastro-enterology: general and genito-urinary). All posts recognised for F.R.C.S. and Pre-registration Service. Posts vacant early December.

Apply, with copies of 3 recent testimonials, to Medical Director by 27th November.

HUDDERSFIELD ROYAL INFIRMARY. (312 Beds.) HUDDERSFIELD HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from provisionally registered medical practitioners for the post of HOUSE PHYSICIAN, to commence duties on 14th December, 1956. Salary in accordance with national scale.

Applications, together with copies of 3 recent testimonials, to be addressed to the undersigned as soon as possible.

H. J. JOHNSON, Secretary to the Management Committee.
The Royal Infirmary, Huddersfield.

HULL A GROUP HOSPITAL MANAGEMENT COM-MITTEE. HOUSE PHYSICIAN (Pædiatric Unit). Duties at Victoria Children's Hospital for 3 months, followed by 3 months on the pædiatric wards, Western General Hospital. An interesting and varied post which includes outpatient and casualty work. This appointment, which commences on 1st January, 1957, is recognised for the D.C.H.

Apply, giving experience, testimonials, &c., to the Secretary, Victoria Hospital for Sick Children, Park-street, Hull.

HOUNSLOW HOSPITAL, Staines-road, Hounslow, MIDDLESEX. (General Acute—81 Beds.) Applications are invited for the appointment of RESIDENT HOUSE SURGEON. Recognised pre-registration appointment for 6 months. Vacant 20th December, 1956.

Applications, stating qualifications and age, together with copies of up to 3 recent testimonials, or names for reference, to the Hospital Secretary.

HOUNSLOW HOSPITAL, Staines-road, Hounslow, MIDDLESEX. (General Acute—81 Beds.) Applications are invited for the appointment of RESIDENT HOUSE PHYSICIAN. Recognised pre-registration appointment for 6 months. Vacant 10th December, 1956.

Applications, stating qualifications and age, together with copies of up to 3 recent testimonials, or names for reference, to the Hospital Secretary.

ILFORD. KING GEORGE HOSPITAL, Eastern-avenue. There will be a vacancy for a HOUSE PHYSICIAN at above Hospital on 1st January, 1957. First or second post pre-registration. The post will be tenable for 6 months.

Applications, giving full particulars and accompanied by testimonials, should be sent to the undersigned within 7 days of the appearance of this advertisement.

H. F. HARRIS, Group Secretary, Ilford
and Barking Group Hospital Management Committee.

ILFORD. KING GEORGE HOSPITAL. There will be a vacancy for a CASUALTY OFFICER at the above Hospital on 10th December, 1956, at a salary of £745 p.a., resident or non-resident. Senior House Officer grade. This post is recognised for the F.R.C.S.

Applications, giving full particulars and accompanied by testimonials, should be sent to the undersigned within 7 days of the appearance of this advertisement.

H. F. HARRIS, Group Secretary, Ilford and
Barking Group Hospital Management Committee.
King George Hospital, Ilford.

IPSWICH AND EAST SUFFOLK HOSPITAL. Anglesea ROAD WING. (356 Beds.) Applications are invited for the post of HOUSE SURGEON to Consultant General Surgeon. The post is recognised for pre-registration and for the F.R.C.S. examinations.

Applications, with copies of recent testimonials, to Hospital Secretary.

IPSWICH AND EAST SUFFOLK HOSPITAL. Anglesea ROAD WING. (356 Beds.) Applications are invited for the post of HOUSE SURGEON to the E.N.T. and Ophthalmic Departments, vacant on 15th December, 1956. The post is recognised for pre-registration and for the D.L.O. examination.

Applications, giving full particulars and copies of recent testimonials, to Hospital Secretary.

IPSWICH AND EAST SUFFOLK HOSPITAL. Anglesea ROAD WING. (356 Beds.) Applications are invited for the post of SENIOR HOUSE OFFICER in General Medicine, available early December. The post offers excellent experience and opportunity for working for higher qualification (M.R.C.P.). The duties are not those of House Physician but carry outpatient responsibility and involve a small amount of research.

Applications, stating age, nationality and experience, together with copies of recent testimonials, to Hospital Secretary.

IPSWICH AND EAST SUFFOLK HOSPITAL. Heath ROAD WING, IPSWICH. (274 Beds.) Applications invited for the post of HOUSE SURGEON (pre-registration) to General Surgeons. The post, vacant shortly, is recognised for the R.C.S. examinations.

Applications, with full details and copies of recent testimonials, to the Hospital Secretary.

KINGSTON HOSPITAL. GROUP LABORATORY. REGISTRAR in Pathology required at above Laboratory. Excellent experience and training in all branches. Non-resident but some emergency duties and residence may be arranged.

Application forms from Secretary, South West Metropolitan Regional Hospital Board. To be returned by 28th November. Laboratory may be visited on application to the Group Pathologist (Kingston 9844).

LIVERPOOL. THE UNITED LIVERPOOL HOSPITALS. LIVERPOOL EAR, NOSE AND THROAT INFIRMARY. Applications are invited for the post of REGISTRAR in Otorhinolaryngology for the period to the 30th September, 1957. Annual reappointment thereafter until completion of the normal period of training will be considered without the need for further application.

Apply by 1st December, 1956, on form obtainable from the Secretary, The United Liverpool Hospitals, 80, Rodney-street, Liverpool, 1.

LEEDS (near). MENSTON (MENTAL) HOSPITAL. Applications invited for whole-time appointments (*a*) SENIOR HOUSE OFFICER; (*b*) JUNIOR HOSPITAL MEDICAL OFFICER. Facilities available for training in all branches of psychiatry in conjunction with Department of Psychiatry, Leeds University. Salaries in accordance with terms and conditions of service of hospital medical and dental staffs. Residential accommodation for single persons. No house or flat available.

Applications to Physician-Superintendent, stating age, civil state, qualifications, experience, and names and addresses of 2 referees.

LEEDS REGIONAL HOSPITAL BOARD. Registrar vacancies.

Anæsthetics

Huddersfield Group (approximately 225 Beds in the surgical specialities). Non-resident.

General and Orthopædic Surgery

Halifax Group. 1 of 3 similar posts divided approximately between general and orthopædic surgery (195 general surgical and 85 orthopædic beds). May include some duties in the Casualty Department. Preferably resident.

Infectious Diseases

Castle Hill Hospital, Cottingham (167 infectious diseases beds). Resident.

Orthopædic Surgery

Pinderfields General Hospital, Wakefield (70 short-stay and 160 long-stay orthopædic beds), and at other hospitals in the Wakefield A and B Groups. Recognised for F.R.C.S.

Applications, stating age, qualifications and details of present and previous appointments with dates, together with the names and addresses of 3 referees, to the Secretary, Joint Registrars Committee, Park-parade, Harrogate, by 23rd November, 1956.

LINCOLN. LAWN HOSPITAL, Union-road. (Mental Hospital for Private Patients—100 Beds.) LINCOLN NO. 2 HOSPITAL MANAGEMENT COMMITTEE. JUNIOR HOSPITAL MEDICAL OFFICER (full-time or locum tenens), required to commence duties at beginning of January, 1957. All modern treatments used at this active Hospital. Pleasant flat available.

Apply to the Medical Superintendent with copies of 3 testimonials.

MAIDSTONE. KENT COUNTY OPHTHALMIC AND AURAL HOSPITAL. (113 Beds.) MID-KENT HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of SENIOR HOUSE SURGEON in the E.N.T. Department of the above Hospital. Post vacant mid-December, 1956. There are 55 E.N.T. beds and 6 specialist operating sessions each week. Valuable experience is available, and the post is recognised for the purpose of the F.R.C.S. and the D.L.O. Salary will be £745 a year, less £150 a year for residential emoluments.

Applications to the Administrative Officer, Kent County Ophthalmic and Aural Hospital, Maidstone, Kent.

MANCHESTER REGIONAL HOSPITAL BOARD and THE BOARD OF GOVERNORS OF THE UNITED MANCHESTER HOSPITALS. 4 whole-time non-resident posts of SENIOR HOUSE OFFICER status, commencing early March, 1957, tenable for 2 years. Facilities will be granted to attend the University course for the D.M.R.(D.) which the successful candidates must be prepared to take and of which details may be obtained from the Postgraduate Dean, Medical School, University of Manchester. Arrangements will be made for trainees to gain wide experience in all branches of radiodiagnosis in several hospitals including the Teaching Hospital.

Applicants must fulfil the requirements of the Examining Board in England, 8–11, Queen-square, London, W.C.1, for the D.M.R.(D.) and must submit written evidence to that effect with their applications, which should be forwarded, with copies of 2 recent testimonials, to the Senior Administrative Medical Officer, Manchester Regional Hospital Board, Cheetwood-road, Manchester, 8, by 7th December, 1956.

MANCHESTER REGIONAL HOSPITAL BOARD invite applications for the non-resident post of REGISTRAR to the E.N.T. Department of the Stockport and Buxton Hospital Management Committee, vacant on 15th January, 1957. The main duties will be at Stockport Infirmary with some duties at other hospitals in the Group.

Applications, stating age, experience and qualifications, together with the names of 2 referees, to be forwarded to—

H. G. PRICE, Secretary.

MANCHESTER REGIONAL HOSPITAL BOARD. Senior REGISTRAR in Chest Diseases with main duties at the Manchester Chest Clinic and also in the Thoracic Surgery Units at Park and Baguley Hospitals, &c.

Application forms, obtainable from the Senior Administrative Medical Officer of the Board, Cheetwood-road, Manchester, 8, should be returned by 2nd December, 1956.

MANCHESTER. SOUTH MANCHESTER HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of SENIOR HOUSE OFFICER (anæsthetics) with duties in the South Manchester Group. This post is recognised by the Royal College of Surgeons for the F.F.A.R.C.S. and for the D.A.

Applications, stating age, present post, experience, and names of 2 referees, to be forwarded immediately to the Group Secretary, Withington Hospital, Manchester, 20.

MANCHESTER. UNITED MANCHESTER HOSPITALS. SAINT MARY'S HOSPITALS, MANCHESTER. Applications are invited for 2 posts of HOUSE OFFICER in Obstetrics, normally but not necessarily for provisionally registered medical practitioners. Salary in accordance with national scale. The appointments are for 6 months from 1st February, 1957.

Application forms may be obtained from the undersigned and returned not later than 30th November, 1956.

A. R. WISE, General Superintendent.
Saint Mary's Hospitals, Whitworth Park, Manchester, 13.

MANCHESTER. UNITED MANCHESTER HOSPITALS. MANCHESTER ROYAL EYE HOSPITAL. Applications are invited for the post of REGISTRAR at the above Hospital. Whole-time post (non-resident). Tenable for 12 months, subject to renewal. Previous experience in ophthalmology essential. The terms and conditions of service for hospital medical and dental staffs will apply.

Applications to be made as soon as possible on forms obtainable from the undersigned.

H. R. NORTH, General Superintendent.

MANCHESTER. UNITED MANCHESTER HOSPITALS. SAINT MARY'S HOSPITALS, MANCHESTER. Applications are invited for the post of HOUSE OFFICER in Gynæcology. Applicants must have had previous hospital experience in medicine and surgery. The post is recognised for the purpose of the M.R.C.O.G. examination. The appointment is for 6 months starting 1st January, 1957. Salary in accordance with national scale.

Application forms may be obtained from the undersigned and returned not later than 24th November, 1956.

A. R. WISE, General Superintendent.
Saint Mary's Hospitals, Whitworth Park, Manchester, 13.

MANCHESTER. UNITED MANCHESTER HOSPITALS. MANCHESTER ROYAL INFIRMARY, MANCHESTER, 13. REGISTRAR to the Department of Diagnostic Radiology, to commence as soon as possible. Whole-time, non-resident appointment, for 12 months, renewable.

Application form obtainable from the undersigned, to be returned not later than 1st December, 1956.

G. H. TAYLOR, Secretary.

MANCHESTER. UNITED MANCHESTER HOSPITALS, MANCHESTER ROYAL INFIRMARY, MANCHESTER, 13. RESIDENT SURGICAL OFFICER (Registrar), to commence as soon as possible. Appointment for 12 months, renewable. Residential charge £155 p.a.

Application form obtainable from the undersigned, to be returned by 1st December, 1956. G. H. TAYLOR, Secretary.

MANCHESTER. UNITED MANCHESTER HOSPITALS. SAINT MARY'S HOSPITALS, MANCHESTER. Applications are invited for the post of HOUSE OFFICER in Obstetrics for 6 months from 1st January, 1957. Salary in accordance with national scale.

Application forms may be obtained from the undersigned and returned not later than 30th November, 1956.

A. R. WISE, General Superintendent.

Saint Mary's Hospitals, Whitworth Park, Manchester, 13.

MANCHESTER VICTORIA MEMORIAL JEWISH HOSPITAL. (Acute—105 Beds. Non-Sectarian.) Applications are invited for the post of RESIDENT SURGICAL OFFICER (Registrar grade). Recognised for F.R.C.S. Vacant 5th January, 1957.

Applications, with names of 2 referees, by 3rd December, 1956, to Group Secretary, North Manchester Hospital Management Committee, Crumpsall Hospital, Manchester.

MANCHESTER. WEST MANCHESTER HOSPITAL MANAGEMENT COMMITTEE. PARK HOSPITAL, DAVYHULME. (General Hospital—433 Beds.) 1 SENIOR HOUSE OFFICER (general surgery) required. Post vacant mid-November.

Application forms from Secretary.

MANCHESTER, 20. WITHINGTON HOSPITAL. South MANCHESTER HOSPITAL MANAGEMENT COMMITTEE. SENIOR HOUSE OFFICER (orthopædics) required at the above Hospital. This post offers excellent experience for persons who ultimately intend to specialise in orthopædics and accident work. In addition to the routine orthopædic duties of a general hospital the unit carries out the reconstructive surgical programme of patients from the Devonshire Royal Hospital, Buxton, which has a regional catchment area.

Applications, with full details and the names of 2 referees, to be forwarded to the Group Secretary, Withington Hospital, as soon as possible.

MIDDLESBROUGH. NORTH ORMESBY HOSPITAL. (180 Beds.) TEES-SIDE HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of HOUSE PHYSICIAN (Male or Female) at the above-named Hospital. The appointment is recognised for Pre-registration Service under the Medical Act, 1950.

Applications, stating full details, and giving 2 names for reference, should be addressed to the Hospital Secretary.

NOTTINGHAM GENERAL HOSPITAL. Resident pre-registration or registered HOUSE SURGEON required. Duties to commence on 1st December.

Applications, stating age, qualifications and experience, together with copies of testimonials, to be sent to the Group Secretary.

NOTTINGHAM GENERAL HOSPITAL. 2 Senior House OFFICERS (orthopædic and fracture) required, one mid-December, one 1st February. The posts offer exceptional experience in traumatic surgery.

Applications, stating age, qualifications and experience, nationality, &c., together with copies of testimonials, to be sent to Group Secretary.

NOTTINGHAM GENERAL HOSPITAL. Senior House OFFICER (anæsthetics) required about 10th January, 1957. The post is recognised for the D.A. and the F.F.A.R.C.S. This is a busy general hospital giving experience in all branches of surgery.

Applications, stating age, nationality, qualifications and experience, together with copies of testimonials, to be sent to the Group Secretary.

NOTTINGHAM GENERAL HOSPITAL. Resident pre-registration or registered HOUSE PHYSICIAN required. Duties to commence end of December.

Applications, stating age, qualifications and experience, together with copies of testimonials, to be sent to the Group Secretary.

NEWMARKET GENERAL HOSPITAL. Applications are invited for the post of HOUSE PHYSICIAN, vacant 31st December, 1956. Duties include house charge of general medical and pulmonary tuberculosis beds. The post is recognised for pre-registration, is resident and tenable for 6 months. Salary in accordance with national scale.

Applications, together with 3 recent testimonials, to Medical Superintendent.

NEWCASTLE REGIONAL HOSPITAL BOARD.

Darlington Hospital Management Committee

REGISTRAR SURGEON (whole-time) at Darlington Memorial Hospital. Single accommodation available. Post recognised for F.R.C.S.

Tees-side Hospital Management Committee

REGISTRAR PÆDIATRICIAN (whole-time), General Hospital, Middlesbrough. Single accommodation available.

Hexham Hospital Management Committee

REGISTRAR PHYSICIAN (whole-time), Hexham General Hospital. Accommodation available.

Darlington Hospital Management Committee

REGISTRAR ANÆSTHETIST (whole-time), Darlington Memorial Hospital. Single accommodation available. Post recognised for F.F.A.R.C.S.

Regional Thoracic Service

REGISTRAR THORACIC SURGEONS (whole-time), resident, at Regional Thoracic Centre (150 Beds), Shotley Bridge General Hospital. Work almost entirely non-tuberculosis (cardiovascular, œsophageal, and pulmonary) and at associated sanatoria. Applicants must have had good experience in general surgery and a higher qualification or its equivalent. Appointment intended either for trainees in thoracic surgery or for general surgeons seeking special experience. Single accommodation available.

Applications, with names and addresses of 3 referees, to Senior Administrative Medical Officer, Benfield-road, Newcastle upon Tyne, 6, within 14 days.

NEWCASTLE REGIONAL HOSPITAL BOARD. Special AREA COMMITTEE FOR CUMBERLAND AND NORTH WESTMORLAND. EAST CUMBERLAND GROUP OF HOSPITALS. REGISTRAR ANÆSTHETIST, required for 1 year in the first instance, with probable extension for a further period. Accommodation can be provided for a single person at the Cumberland Infirmary, Carlisle, where the main duties of the post will lie. The post is recognised for the D.A. and the F.F.A.R.C.S.

Applications, together with the names of 1–3 referees, to be sent to the Senior Administrative Medical Officer, 72, Warwick-road, Carlisle, within 14 days.

OSWESTRY. THE ROBERT JONES AND AGNES HUNT ORTHOPÆDIC HOSPITAL. SENIOR SURGICAL HOUSE OFFICER (resident) required.

Apply Secretary.

OXFORD REGIONAL HOSPITAL BOARD. Registrar (whole-time) in Psychiatry, to St. Crispin Hospital, Duston, Northamptonshire. There is excellent opportunity to gain experience in adult and child psychiatry, inpatient and outpatient work, and E.E.G. Unit. Post recognised for D.P.M. Residential accommodation for married or single applicant.

Application forms, obtainable from the Secretary, Committee for Registrars, 43, Banbury-road, Oxford, should reach him by 30th November.

OXFORD REGIONAL HOSPITAL BOARD. Registrar (whole-time) in Psychiatry to the Littlemore Hospital, Oxford (900 Beds). Appointment for 1 year in the first instance. Non-resident.

Application forms, obtainable from the Secretary, Registrar Committee, 43, Banbury-road, Oxford, should reach him by 8th December, 1956.

OXFORD REGIONAL HOSPITAL BOARD. Locum REGISTRAR (general surgery). Post vacant now. Duties mainly at Amersham and Stoke Mandeville Hospitals.

Applications to the Secretary, Registrar Committee, 43, Banbury-road, Oxford.

OXFORD. UNITED OXFORD HOSPITALS. Applications invited for the post of SENIOR HOUSE OFFICER in the Anæsthetic Department at the Radcliffe Infirmary with effect from 1st January, 1957, for a period of 6 months.

Applications, stating age, qualifications and experience, together with names of 2 referees, to Administrator, Radcliffe Infirmary, Oxford, by 24th November, 1956.

OXFORD. UNIVERSITY OF OXFORD AND UNITED OXFORD HOSPITALS. Applications are invited for the post of FIRST ASSISTANT (Senior Registrar) in the Department of Otolaryngology at the Radcliffe Infirmary. The appointment is full-time and duties lie mainly within the United Oxford Hospitals; but they carry honorary attachment at certain hospitals of the Regional Hospital Board in connection with visits made to those hospitals by Oxford Consultants. Candidates must hold the Diploma of Royal College of Surgeons and must have had satisfactory experiences in the specialty as Registrar.

Applications, on forms obtainable from the Administrator, Radcliffe Infirmary, Oxford, should be received not later than 26th November, 1956.

PERTH. COUNTY AND CITY OF PERTH GENERAL HOSPITALS. The following House Officer posts will fall vacant on 1st February, 1957 :—

Bridge of Earn Hospital

*1 SENIOR HOUSE SURGEON (Fracture and Orthopædic Unit).
*3 HOUSE SURGEONS (Fracture and Orthopædic Unit).
*3 HOUSE SURGEONS (general surgical wards).
†1 HOUSE SURGEON (gynæcology and obstetrics).
‡1 HOUSE SURGEON or SENIOR HOUSE SURGEON (E.N.T. ward).
3 HOUSE PHYSICIANS (general medical wards).
§1 SENIOR HOUSE OFFICER (anæsthetics).

Perth Royal Infirmary

*2 HOUSE SURGEONS (general surgical wards).
*1 HOUSE SURGEON or SENIOR HOUSE SURGEON (casualty).
3 HOUSE PHYSICIANS (general medical wards).
§1 SENIOR HOUSE OFFICER (anæsthetics).

Notes :

(1) Senior House Officer posts are tenable for 12 months and Junior House Officer posts for 6 months, with the exception of the Gynæcology and Obstetrics post shown under Bridge of Earn Hospital : this post is tenable for 12 months and consists of 6 months gynæcology at Bridge of Earn Hospital, followed by 6 months obstetrics at Perth Royal Infirmary.

(2) All Junior House Officer posts are recognised for Pre-registration Hospital Service.

(3) Posts marked * are recognised by the Royal College of Surgeons under the regulations for the F.R.C.S.

(4) Post marked † is recognised both for gynæcology and obstetrics under the regulations for the M.R.C.O.G. The obstetrics post at Perth Royal Infirmary is also recognised for the Diploma in Obstetrics of the Royal College of Gynæcologists.

(5) Post marked ‡ is recognised under the regulations for the D.L.O.

(6) Posts marked § are recognised under the regulations for the D.A. and F.F.A.R.C.S.

Applications, giving details of age, qualifications, experience, and the names of 2 referees, should be sent to the Group Medical Superintendent, Perth Royal Infirmary, Perth.

PORTSMOUTH GROUP HOSPITAL MANAGEMENT COMMITTEE.

Queen Alexandra Hospital (87 surgical beds)

HOUSE SURGEON (pre-registration post), vacant 20th November, 1956.

Applications, stating age, experience, and qualifications, together with names of 2 referees, should be forwarded as soon as possible to E. H. HURST.

St. Mary's Hospital, Milton-road, Portsmouth.

PORTSMOUTH GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the following appointment :—

Queen Alexandra Hospital, Cosham

Full-time NON-RESIDENT JUNIOR HOSPITAL MEDICAL OFFICER (dermatology—24 Beds). The appointment includes outpatient duties at other hospitals. Vacant 1st January, 1957.

Applications, stating age, experience and qualifications, together with names of 2 referees, should be forwarded as soon as possible to E. H. HURST,

Saint Mary's Hospital, Portsmouth.

PLYMOUTH. SOUTH DEVON AND EAST CORNWALL HOSPITAL. CENTRAL CASUALTY DEPARTMENT. SENIOR HOUSE OFFICER in Casualty, vacant 1st January, 1957. Recognised for the F.R.C.S.

Applications, stating age, nationality, qualifications and experience, with names of 3 referees, to be sent to—

ARTHUR R. CASH, Group Secretary, Plymouth,

South Devon and East Cornwall General Hospital Group.

7, Nelson-gardens, Stoke, Plymouth.

PLYMOUTH. SOUTH DEVON AND EAST CORNWALL HOSPITAL.

HOUSE SURGEON (pre-registration post), vacant 1st January, 1957. Recognised for the F.R.C.S. Freedom Fields Section.

HOUSE SURGEONS (pre-registration posts), vacancies 1st December, 1956, 10th and 18th January, 1957. Recognised for the F.R.C.S. Greenbank Road Section.

Applications, stating age, nationality, qualifications and experience, together with the names and addresses of 3 referees, to be sent to—

ARTHUR R. CASH, Group Secretary, Plymouth,

South Devon and East Cornwall General Hospital Group.

7, Nelson-gardens, Stoke, Plymouth.

PRESTON (near), LANCASHIRE. WHITTINGHAM HOSPITAL. JUNIOR HOSPITAL MEDICAL OFFICER. Applications are invited for this post at the largest Mental Hospital in the country where all modern treatment is undertaken, including Electro-encephalography for the area. Facilities will be given for study either for the D.P.M. at Manchester University or for the M.R.C.P. at a large General Hospital a few miles away. The Hospital is well situated in a country district with easy access to Preston, Blackpool and Southport. Comfortable furnished or unfurnished flat can be arranged for a married man.

Applications, endorsed "Medical Officer," giving details of experience and names and addresses of 3 referees, to be addressed to The Medical Superintendent, Whittingham Hospital, near Preston, and be received as soon as possible.

RETFORD, NOTTINGHAMSHIRE. RAMPTON HOSPITAL. (1143 Beds for mental defectives of both sexes exhibiting conduct disorders.) SENIOR REGISTRAR. Excellent opportunities for study of psychopath behaviour and for research. Psychiatric experience essential ; D.P.M. or Part I thereof desirable. Modern house available. Candidates may visit Hospital by appointment.

Applications, naming 3 referees, to Medical Superintendent by 1st December, 1956.

READING AND DISTRICT HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of RESIDENT SENIOR HOUSE OFFICER (Area Accident and Orthopædic Department), vacant mid-December. Recognised for F.R.C.S. Duties including work in area Casualty Department at Battle Hospital, Reading (300 Beds). Person appointed will work with Registrar and House Officers.

Apply, stating nationality, present post and qualifications with dates, together with names of 2 referees, to Group Secretary, 3, Craven-road, Reading.

READING AREA DEPARTMENT OF MEDICINE. Applications are invited from registered and provisionally registered medical practitioners for 2 posts as RESIDENT HOUSE PHYSICIAN vacant on 1st December, 1956, for a period of 6 months. Successful applicants will be required to carry out duties at the following Reading Hospitals : Royal Berkshire (398 Beds), Battle (300 Beds) and Prospect Park (104 Beds).

Write immediately, stating age, qualifications with dates, nationality, present post, with copy of a recent testimonial, to Secretary, Royal Berkshire Hospital, Reading.

READING. BATTLE HOSPITAL. (391 Beds.) Applications are invited from registered medical practitioners for the post of RESIDENT JUNIOR HOUSE SURGEON (orthopædic) in the Area Accident and Orthopædic Department. Post now vacant. F.R.C.S. recognised. Also casualty duties. Salary £425–£525 p.a., less £150 board-residence.

Apply, stating age, qualifications with dates, nationality, present post, with 1 copy of recent testimonial, to Hospital Secretary.

READING. ROYAL BERKSHIRE HOSPITAL. (398 Beds.) Applications are invited from provisionally registered medical practitioners, Male and Female, for resident post of HOUSE SURGEON, vacant 1st December, 1956, and tenable for 6 months.

Write immediately, stating age, qualifications with dates, nationality, present post, with copy of 1 recent testimonial, to Secretary.

READING. ROYAL BERKSHIRE HOSPITAL. (339 Beds.) Applications are invited from registered medical practitioners (Male or Female) for the appointment of a SENIOR HOUSE OFFICER (anæsthetics), vacant 1st January, 1957, for a period of 1 year. Post recognised for F.F.A.R.C.S. Salary £745 p.a., less £150 for board-residence.

Write, stating age, qualifications with dates, nationality and present post, together with the names of 3 referees, to the Group Secretary, Reading and District Hospital Management Committee, 3, Craven-road, Reading.

READING. ROYAL BERKSHIRE HOSPITAL. Applications are invited from registered medical practitioners only for the post of RESIDENT ASSISTANT PATHOLOGIST vacant 6th December and tenable for 6 months. Salary £525 p.a.

Write, stating age, qualifications with dates, nationality, present post, with copy of 1 recent testimonial, to Secretary.

ROCHDALE AND DISTRICT HOSPITAL MANAGEMENT COMMITTEE. HOUSE SURGEON required at Rochdale Infirmary, early December. Pre-registration candidates eligible for this post which is recognised for 6 months F.R.C.S. experience.

Apply at once to Group Secretary, Central Offices, Birch Hill Hospital, Rochdale.

ROCHFORD, ESSEX. GENERAL HOSPITAL. (622 Beds.) Applications are invited from pre-registration candidates for a 6 months appointment of HOUSE SURGEON (recognised for F.R.C.S.) at the above Hospital. Post vacant 1st December, 1956.

Applications, &c., accompanied by 1 testimonial, to reach the undersigned by 21st November, 1956.

J. C. FIELD, Secretary.

ROCHFORD, ESSEX. GENERAL HOSPITAL. (622 Beds.) Applications are invited from pre-registration candidates for a 6 months appointment of HOUSE PHYSICIAN at the above Hospital. Post vacant 15th December, 1956.

Applications, &c., accompanied by 1 testimonial, to reach the undersigned by 29th November, 1956.

J. C. FIELD, Secretary.

ROCHFORD, ESSEX. GENERAL HOSPITAL. (622 Beds.) Applications are invited from pre-registration candidates for a 6 months appointment of HOUSE SURGEON (recognised for F.R.C.S.) to be followed, subject to satisfactory service, by a 6 months appointment as House Officer (obstetrics) (recognised for D.Obst. R.C.O.G.). Post vacant 15th December, 1956.

Applications, accompanied by 1 testimonial, to reach the undersigned by 29th November, 1956.

J. C. FIELD, Secretary.

ROMFORD, ESSEX. OLDCHURCH HOSPITAL. (722 Beds.) SENIOR HOUSE OFFICER (resident or non-resident), required for duties in the Casualty Department. Available for Male or Female applicants. This is a large General Hospital with specialised departments dealing with all types of acute medical and surgical cases. The post affords good opportunity for gaining tuition and experience.

Applications should be forwarded immediately to the Group Secretary, Romford Group Hospital Management Committee, Oldchurch Hospital, Romford.

ROTHERHAM. DONCASTER GATE HOSPITAL. (161 Beds.) SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time RESIDENT MEDICAL REGISTRAR required with duties also at the Moorgate General Hospital, Rotherham (355 Beds). Post vacant 20th January, 1957. Appointment for 1 year in first instance.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 26th November, 1956, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

SIDCUP AND SWANLEY HOSPITAL MANAGEMENT COMMITTEE. SENIOR HOUSE OFFICER (casualty and orthopædic) required immediately. The successful applicant will serve 3 months in the Orthopædic Department and 3 months as Casualty Officer. The post is recognised under the Fellowship regulations as a period of 6 months casualty training.

Applications, stating age, qualifications and experience, together with names and addresses of 2 referees, should be sent to Secretary, Queen Mary's Hospital, Sidcup, Kent.

SCOTLAND. SOUTH-EASTERN REGIONAL HOSPITAL BOARD. SENIOR REGISTRAR to the Royal Edinburgh Hospital for Mental and Nervous Disorders. The Hospital, which is linked with the University Department of Psychological Medicine and includes the professorial unit in the Jordanburn Nerve Hospital, offers exceptional opportunities for varied clinical work, teaching and research. During the tenure of the post opportunities for interchange of duty and training at other centres in the Region may be available under arrangements made between the South-Eastern Regional Hospital Board and the University Department of Psychological Medicine. Single accommodation is available. Applicants must hold a Diploma in Psychological Medicine or a higher qualification in medicine. The Hospital may be visited by arrangement with the Physician-Superintendent.

Apply, giving particulars of age, qualifications and previous experience, together with the names of 3 referees, to the Secretary, 11, Drumsheugh-gardens, Edinburgh, 3, by 8th December.

SCOTLAND. SOUTH-EASTERN REGIONAL HOSPITAL BOARD. REGISTRAR to the Royal Edinburgh Hospital for Mental and Nervous Disorders. During the tenure of the post opportunities for study and interchange of duty and training at other centres in the Region may be available under the joint training scheme of the South-Eastern Regional Hospital Board and the Department of Psychological Medicine of the University of Edinburgh. Single accommodation available. The Hospital may be visited by arrangement with the Physician-Superintendent.

Apply, giving particulars of age, qualifications and previous experience, and the names of 2 referees, to the Secretary, 11, Drumsheugh-gardens, Edinburgh, 3, by 8th December.

SCOTLAND. SOUTH-EASTERN REGIONAL HOSPITAL BOARD. REGISTRAR in Tuberculosis at Southfield Hospital. The post is attached to the Professorial Unit of the Department of Tuberculosis and Diseases of the Respiratory System, University of Edinburgh. The holder will be expected to take part in teaching and research in addition to clinical duties.

Apply, giving particulars of age, qualifications and previous experience, and the names of 2 referees, to the Secretary, 11, Drumsheugh-gardens, Edinburgh, 3, by 8th December.

SCOTLAND. SOUTH-EASTERN REGIONAL HOSPITAL BOARD. REGISTRAR at Stratheden Hospital, Cupar, Fife. During the tenure of the post opportunities for interchange of duty and training at other centres in the Region may be available under the joint training scheme of the South-Eastern Regional Hospital Board and the Department of Psychological Medicine of the University of Edinburgh. Residence is available.

Apply, giving particulars of age, qualifications and previous experience, and the names of 2 referees, to the Secretary, 11, Drumsheugh-gardens, Edinburgh, 3, by 8th December.

SCOTLAND. WESTERN REGIONAL HOSPITAL BOARD. Applications are invited for the following appointments, which will be for 1 year in the first instance :—

SENIOR REGISTRAR in Ophthalmology based at the Glasgow Ophthalmic Institution.
REGISTRAR in Surgery based at Greenock Royal Infirmary.
REGISTRAR in Psychiatry based at Hawkhead Mental Hospital, Glasgow.
REGISTRAR in Psychiatry based at Riccartsbar Mental Hospital, Paisley.
REGISTRAR in Medicine based at Larkfield Hospital, Greenock.

These appointments are subject to the National Health Service (Scotland) superannuation regulations.

Applications (12 copies), stating date of birth, qualifications, experience, present appointment, and the names of 3 referees, to reach the Secretary, Western Regional Hospital Board, 64, West Regent-street, Glasgow, C.2, by 1st December, 1956.

SALFORD ROYAL HOSPITAL. (257 Beds—General) SALFORD HOSPITAL MANAGEMENT COMMITTEE. Applications invited for the appointment of SENIOR HOUSE OFFICER (Orthopædic and Casualty Departments), resident. Post vacant mid-December. Recognised for F.R.C.S. Gives opportunity for experience in emergency surgery.

Applications, with copies of 3 recent testimonials should be sent to the Secretary, Salford Royal Hospital, Chapel-street, Salford, 3.

SALISBURY GROUP HOSPITAL MANAGEMENT COMMITTEE. SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited for the post of SENIOR REGISTRAR in Plastic Surgery to the Plastic and Oral Surgery Centre, Odstock Hospital, Salisbury. Applicants should hold a Fellowship in Surgery and should have had experience in general surgery. Facilities exist for research and for training in all aspects of the specialty. The post is normally tenable for a period of up to 4 years and a Registrar exchange scheme with other Centres is available.

Application forms may be obtained from, and must be returned to, the Group Secretary, Odstock Hospital, Salisbury.

SHEFFIELD. CITY GENERAL HOSPITAL. Department OF PATHOLOGY GROUP LABORATORY. Applications are invited for the appointment of SENIOR HOUSE OFFICER (clinical pathology). Resident accommodation is available and optional. Opportunities for training in morbid anatomy, biochemistry, hæmatology and bacteriology. The work of this and the associated hospitals offers excellent experience to graduates who wish to make pathology their permanent career. The post is recognised for the D.Path.

Apply, giving details of age, qualifications, present and previous appointments with dates, and the names of 2 persons to whom reference may be made, to the Group Secretary, Nether Edge Hospital, Sheffield, 11.

SHEFFIELD. THE UNITED SHEFFIELD HOSPITALS. Applications invited for the following posts :—

Children's Hospital/Jessop Hospital for Women

RESIDENT REGISTRAR required at the above Hospitals in association with the Department of Child Health in the University of Sheffield. The post is a rotating one between the 2 hospitals, alternating with another Registrar, so that the successful candidate will spend half his time in charge of newborn babies at the Jessop Hospital, and half his time in the Professorial Department at the Children's Hospital. Post vacant 1st February, 1957.

REGISTRAR or SENIOR HOUSE OFFICER in Clinical Pathology. Grade according to qualifications and experience. The successful candidate may be required to work in any of the laboratories of the United Sheffield Hospitals.

Applications, stating age, qualifications and experience, with the names of 3 referees, should be sent not later than 30th November, 1956, to the Chief Administrative Officer, The United Sheffield Hospitals, West-street, Sheffield, 1.

SKIPTON (near). GRASSINGTON HOSPITAL. (208 Beds.) JUNIOR HOSPITAL MEDICAL OFFICER required for the above Hospital, which provides treatment for tuberculosis patients, men and women. Accommodation available for single applicants.

Applications to Medical Superintendent.

SKIPTON (near). GRASSINGTON HOSPITAL. (208 Beds.) SENIOR HOUSE OFFICER required for the above Hospital, which provides treatment for tuberculosis patients, men and women. Accommodation available for single applicants.

Applications to Medical Superintendent.

SHREWSBURY. ROYAL SALOP INFIRMARY. (241 Beds.) SENIOR HOUSE OFFICER (casualty), resident or non-resident. Duties from 9 A.M. to 6 P.M. daily, except Saturday which will be 9 A.M. to 1 P.M. Applicant required to do 1 week-end's duty in 3. Post recognised for F.R.C.S. Vacant 1st January, 1957.

Applications, with copy testimonials, to Group Secretary, Royal Salop Infirmary, Shrewsbury.

SHREWSBURY. ROYAL SALOP INFIRMARY AND COPTHORNE HOSPITAL. (500 Beds.) RESIDENT ANÆSTHETIST (Senior House Officer). Post recognised for F.F.A.R.C.S. Registrar also employed. Vacant 1st January, 1957.

Applications and copy testimonials to Group Secretary, Shrewsbury Hospital Group, Royal Salop Infirmary, Shrewsbury.

SHREWSBURY. CROSS HOUSES HOSPITAL. (34 maternity beds.) OBSTETRIC HOUSE SURGEON (pre-registration post), vacant immediately.

Applications, with copy testimonials, to Group Secretary, Shrewsbury Hospital Group, Royal Salop Infirmary, Shrewsbury.

J. P. MALLETT, Group Secretary.

SHOREHAM-BY-SEA, SUSSEX. SOUTHLANDS HOSPITAL. (411 Beds.) Locum Tenens REGISTRAR for Obstetric Gynæcological Department. 5th–31st December, 1956.

Telephone No. Shoreham-by-Sea 2381.

A. V. OAKTON, Group Secretary,
Worthing Group Hospital Management Committee.
129, Brighton-road, Worthing, Sussex.

SOUTH EAST METROPOLITAN REGIONAL HOSPITAL BOARD. CANTERBURY, ISLE OF THANET AND SOUTH-EAST KENT GROUPS OF HOSPITALS. Applications are invited for 2 appointments as REGISTRAR in Orthopædic Surgery, 1 to the Canterbury and Isle of Thanet groups and the other to the Canterbury and South-East Kent groups ; duties will rotate annually between the 2 appointments, which offer experience in traumatic work and in general orthopædic surgery, including long-stay cases. The appointments will be in accordance with the terms and conditions of hospital medical and dental staffs (England and Wales).

Applications, giving particulars of age, qualifications and experience with relevant dates, together with the names and addresses of 2 referees, to be sent to the Secretary, Registrars Committee, South East Metropolitan Regional Hospital Board, 11, Portland-place, London, W.1, not later than 1st December, 1956.

SOUTH EAST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited for an appointment as Whole-time REGISTRAR in Orthopædic Surgery to fill a vacancy in the approved trainee establishment in the Medway and Gravesend Group of hospitals. The appointment will be in accordance with the terms and conditions of service of hospital medical and dental staffs (England and Wales), and will be for 1 year in the first instance.

Applications, giving particulars of age, qualifications and experience with relevant dates, together with the names and addresses of 2 referees, to be sent to the Secretary, Registrars Committee, South East Metropolitan Regional Hospital Board, 11, Portland-place, W.1, not later than 1st December, 1956.

SOUTHAMPTON EYE HOSPITAL. (32 Beds. Recognised for D.O. examination.) RESIDENT SENIOR HOUSE OFFICER required end December.

Applications, with copies of testimonials, should be forwarded as soon as possible to Secretary, Southampton Group Hospital Management Committee, Bullar-street.

SOUTHAMPTON GENERAL HOSPITAL. (472 Beds. Recognised for the Membership and Diploma examinations of the R.C.O.G.). RESIDENT HOUSE SURGEON (pre-registration) to the Gynæcological and Obstetric Unit required during November.

Applications, with copies of recent testimonials, should be forwarded as soon as possible to the Group Secretary, Southampton Group Hospital Management Committee, Bullar-street, Southampton.

SOUTHAMPTON. ROYAL SOUTH HANTS HOSPITAL (274 Beds) and SOUTHAMPTON GENERAL HOSPITAL (472 Beds). SENIOR HOUSE OFFICER (E.N.T.) required. This post is recognised for the F.R.C.S. (Eng.) and D.L.O. examinations and provides experience in all branches of E.N.T. work. The Group includes a diagnostic and distributing Hearing Aid Centre.

Applications, with copies of recent testimonials, should be forwarded as soon as possible, to the Secretary, Southampton Group Hospital Management Committee, Bullar-street, Southampton.

SOUTHEND GENERAL HOSPITAL. Applications are invited for the post of RESIDENT GYNÆCOLOGICAL HOUSE SURGEON vacant 30th December, 1956. The post is recognised for the M.R.C.O.G.

Applications, stating age, qualifications and previous experience, with copies of recent testimonials, should reach the undersigned by 29th November, 1956.

J. C. FIELD, Secretary.

SOUTHEND GENERAL HOSPITAL. Applications are invited from registered or provisionally registered practitioners for 2 RESIDENT HOUSE SURGEON appointments. Both posts vacant 12th December, 1956. Salary according to previous appointments held, less prescribed charge for residential emoluments.

Applications, stating age, qualifications and previous experience, with copies of recent testimonials (1 testimonial sufficient from applicants for first appointment) to reach the undersigned by 21st November, 1956. J. C. FIELD, Secretary.

SLOUGH, BUCKINGHAMSHIRE. UPTON HOSPITAL. WINDSOR GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications invited for post of HOUSE SURGEON (pre-registration post).

Applications, with names of 2 referees, to Secretary.

STOCKPORT AND BUXTON HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the following posts, which are approved for pre-registration purposes :—

Stockport Infirmary (163 Beds)

HOUSE OFFICER (general surgery and E.N.T.). Recognised for the F.R.C.S. and D.L.O. Vacant 31st January, 1957.
HOUSE OFFICER (general surgery and gynæcology). Recognised for the F.R.C.S. Vacant 21st February, 1957.

Stepping Hill Hospital, Stockport (535 Beds)

HOUSE OFFICER (medicine), vacant 27th January, 1957.
HOUSE OFFICER (medicine), vacant 31st January, 1957.
HOUSE OFFICER (obstetrics). Recognised for the D.Obst.R.C.O.G. Vacant 3rd February, 1957.

Applications, with copies of 2 testimonials, to the Group Secretary, 59B, Shaw-heath, Stockport, Cheshire, to be received by 12th December, 1956.

SOUTHPORT GENERAL INFIRMARY. (Recognised for F.R.C.S. and pre-registration.)
HOUSE SURGEON (surgery and gynæcology), vacant about December.
HOUSE SURGEON (surgery and ophthalmology), vacant January, 1957.
Apply, stating age, qualifications, nationality, experience, and enclosing 2 copy testimonials, to Group Secretary, Southport and District Hospital Management Committee, Promenade Hospital, Southport.

ST. ALBANS CITY HOSPITAL, St. Albans, Hertfordshire. (384 Beds.) Locum Tenens JUNIOR HOSPITAL MEDICAL OFFICER (resident) required for the Gynæcological and Obstetric Departments mainly at the above Hospital for the period 21st December, 1956–6th January, 1957.
Applications to Secretary, Mid Herts Group Hospital Management Committee, Bleak House, Catherine-street, St. Albans.

ST. ALBANS (near). HARPERBURY HOSPITAL, Harper-lane, SHENLEY, near ST. ALBANS, HERTS. JUNIOR HOSPITAL MEDICAL OFFICER required. Salary scale as laid down by Whitley Council, £775 p.a.–£50–£1075 p.a. Harperbury Hospital is a modern hospital of 1624 Beds for mentally defective patients of both sexes and all grades. The Hospital is situated 5 miles from St. Albans and may be visited by arrangement.
Applications, with full details and 1 recent testimonial and the names and addresses of 2 referees, to be sent to the Medical Superintendent, within 10 days of the appearance of this advertisement.

STOKE-ON-TRENT. BUCKNALL HOSPITAL. (58 infectious, 20 pneumoconiosis, 124 chronic sick beds.) Applications invited for post of RESIDENT JUNIOR HOSPITAL MEDICAL OFFICER. Married accommodation available. The person appointed will be associated with all 3 departments of the Hospital and will be required to assist at the pneumoconiosis clinic.
Applications, with copy testimonials, to Group Secretary, Hospital Management Committee, Princes-road, Stoke-on-Trent.

STOKE-ON-TRENT HOSPITAL MANAGEMENT COMMITTEE. Appointment of RESIDENT ASSISTANT CLINICAL PATHOLOGIST to the Stoke-on-Trent Group of hospitals, vacant December. Single accommodation at North Staffs. Royal Infirmary. The post is Junior Hospital Medical Officer status, but applicants with less than 2 years qualification period will be considered in the grade of Senior House Officer. Exceptional experience in hospital laboratory work. Recognised for D.C.P. and Diploma in Pathology.
Detailed applications with particulars of previous appointments held (3 testimonials) to Group Secretary, Hospital Management Committee, Princes-road, Stoke-on-Trent, as soon as possible.

STOKE-ON-TRENT. NORTH STAFFORDSHIRE ROYAL INFIRMARY. HOUSE PHYSICIAN (general medicine) with pædiatrics. Pre-registration post.
Detailed applications, with copy testimonials, to Group Secretary, Hospital Management Committee, Princes-road, Stoke-on-Trent.

STRATFORD-ON-AVON GENERAL HOSPITAL. (163 Beds.) SENIOR HOUSE OFFICER (Resident Medical Officer) required. Post vacant 16th January, 1957. Duties on medical wards under supervision of Consultant staff. Appointment gives good experience in general medicine and is suitable for one working for a higher qualification. 2 other resident staff.
Applications, giving qualifications and experience, together with copies of 2 testimonials, to Hospital Secretary.

SUNDERLAND. THE ROYAL INFIRMARY. The CASUALTY DEPARTMENT. A vacancy will occur 1st January, 1957, for a CASUALTY OFFICER (Senior House Officer grade). The Casualty Officer is to take charge of the Casualty Department under the direct supervision of a Senior Surgeon. This post is recognised for the F.R.C.S.
Applications, with names of 2 referees, to the Hospital Secretary, Royal Infirmary, Sunderland.

SWANSEA. MOUNT PLEASANT HOSPITAL. (236 Beds.) GLANTAWE HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of SENIOR HOUSE OFFICER in Obstetrics and for the Maternity Unit of 40 Beds at the above Hospital. The post, which will become vacant on 1st February, 1957, is for a period of 12 months, and is recognised for the D.Obst.R.C.O.G. examination.
Applications, stating age, qualifications and experience, together with copies of 2 recent testimonials, should be sent to the Hospital Secretary not later than 30th November, 1956.
T. E. JONES, Group Secretary.

SWINDON AND DISTRICT HOSPITAL MANAGEMENT COMMITTEE. SWINDON HOSPITALS. Applications invited for posts of RESIDENT HOUSE PHYSICIANS in acute Medical Unit of 64 Beds at St. Margaret's Hospital. Recognised for training under pre-registration internship regulations and vacant on 10th and 23rd December, 1956.
Full details, with names of 3 referees, to Secretary, 7, Okus-road, Swindon, as soon as possible.

SWINDON AND DISTRICT HOSPITAL MANAGEMENT COMMITTEE. SWINDON HOSPITALS. Applications invited for posts of RESIDENT HOUSE SURGEONS for General Surgical Unit of 80 Beds at Victoria Hospital. Recognised for F.R.C.S. and training under pre-registration internship regulations, and vacant on 3rd December, 1956, and 17th January, 1957. Married accommodation available.
Full details, with names of 3 referees, to Secretary, 7, Okus-road, Swindon, as soon as possible.

WARWICK HOSPITAL. (320 Beds.) **Senior House** OFFICER (anæsthetics), for duties mainly at the above Hospital. The post is vacant, recognised for D.A. and F.F.A.R.C.S.
Applications, with names of 3 referees, to Medical Superintendent.

TAPLOW, near MAIDENHEAD. CANADIAN RED CROSS MEMORIAL HOSPITAL. SENIOR HOUSE OFFICER to Department of Pathology required for post vacant 18th December. Post offers scope for participation in routine work of all sections of department and in research undertaken by Special Unit for Juvenile Rheumatism.
Applications, giving age, qualifications and experience, with copies of 3 recent testimonials, to Secretary.

VIRGINIA WATER, SURREY. HOLLOWAY SANATORIUM. SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited for the post of SENIOR REGISTRAR in Psychiatry at the above Hospital of 750 Beds for acute psychiatric cases. Applicants should be in possession of a D.P.M. (or equivalent) and are invited to visit the Hospital by local arrangement. A flat is available for a married man.
Application forms can be obtained from the Group Secretary and should be submitted within 14 days of the appearance of this advertisement.

WAKEFIELD. STANLEY ROYD HOSPITAL. Applications invited for post of JUNIOR HOSPITAL MEDICAL OFFICER in Psychiatry. Salary scale £775–£50–£1075. Married accommodation may be available.
Address written applications, giving full personal particulars, details of training, experience, &c., together with 2 names and addresses for reference, to W. BOWRING, Group Secretary, Victoria Chambers, Wood-street, Wakefield.

WEST BROMWICH AND DISTRICT GENERAL HOSPITAL. (144 Beds.) HOUSE PHYSICIAN, vacant 1st January, 1957. Pre-registration.
Applications, with 3 recent testimonials, to Group Secretary, West Bromwich and District Hospital Management Committee, Edward-street, West Bromwich.

WELSH REGIONAL HOSPITAL BOARD. Whole-time Locum Tenens REGISTRAR in General Surgery required Bridgend General Hospital immediately.
Applications, naming 2 referees, to Senior Administrative Medical Officer, Temple of Peace, Cathays Park, Cardiff.

WELSH REGIONAL HOSPITAL BOARD.
REGISTRAR (traumatic surgery), based at St. David's Hospital, Cardiff (606 Beds).
REGISTRAR (general surgery), based at Bridgend General Hospital, Bridgend (381 Beds), to serve Mid-Glamorgan Hospital Management Committee. May also be expected to serve other hospitals in Group. Hospital recognised for F.R.C.S. Resident/non-resident.
Subject to review end of first year.
Application forms from Senior Administrative Medical Officer, Temple of Peace, Cathays Park, Cardiff, within 14 days.

WIGAN AND LEIGH GROUP OF HOSPITALS. Registrar in Chest Diseases to the above Group. 2 busy chest clinics and opportunity to gain experience in Thoracic Surgical Unit.
Applications, with names of 2 referees, to Secretary, Knowsley House, Wigan.

WIGAN (near). BILLINGE HOSPITAL, Orrell, near WIGAN. (375 Beds.) SENIOR HOUSE OFFICER in General Surgery required for duty at above Hospital. Post vacant 1st January, 1957.
Applications, with names of 2 referees, to Secretary, Wigan and Leigh Hospital Management Committee, Knowsley House, Wigan.

WIGAN (near). BILLINGE HOSPITAL. Registrar in Psychiatry (resident or non-resident) to assist Consultant Psychiatrist. Main centre—Billinge Hospital. Active Psychiatric Unit. Modern treatment. Over 300 admissions annually. Post recognised for D.P.M. Good training facilities.
Applications, with names of 2 referees, to Secretary, Wigan and Leigh Hospital Management Committee, Knowsley House, Wigan.

WIGAN. ROYAL ALBERT EDWARD INFIRMARY. RESIDENT SURGICAL REGISTRAR required at above Infirmary, vacant 1st January, 1957. Preference given to holders of higher surgical qualifications. Post recognised for F.R.C.S.
Apply, with names of 2 referees, to Secretary, Wigan and Leigh Hospital Management Committee, Knowsley House, Wigan.

WINDSOR. KING EDWARD VII HOSPITAL. House PHYSICIAN required, Male or Female, for post vacant 11th January. Preference given to persons seeking pre-registration post. Applicants required to be members of Medical Protection Society.
Applications, stating age, qualifications with dates, nationality and copies of 3 recent testimonials, to Secretary.

WINDSOR. KING EDWARD VII HOSPITAL. House SURGEON in General Surgery required, Male or Female, for post vacant 24th January. Recognised for F.R.C.S. Preference given to persons seeking pre-registration post. Applicants required to be members of a Medical Protection Society.
Applications, stating age, nationality, qualifications with dates, and copies of recent testimonials, to Secretary.

WINCHESTER. ROYAL HAMPSHIRE COUNTY HOSPITAL. (315 Beds.) HOUSE PHYSICIAN (pre-registration), vacant 1st January, 1957.
Applications, with copies of 2 testimonials, to the Secretary.

WOODFORD GREEN, ESSEX. HARTS HOSPITAL. (100 Beds.) SENIOR HOUSE OFFICER required. Post vacant 1st December, 1956. The Hospital is a modern sanatorium with a Thoracic Surgical Unit and Area Chest Clinic. The post offers exceptional opportunity for gaining experience in tuberculosis and diseases of the chest. Accommodation for single person only. Salary £745 p.a., less £150 p.a. for board, lodging, &c.
Applications, with copies of 2 recent testimonials, should be sent immediately to Secretary, Forest Group Hospital Management Committee, Langthorne-road, E.11.

WINDYGATES, FIFESHIRE. CAMERON I.D. HOSPITAL. PHYSICIAN for diseases of the chest required for Chest Unit of 30 Beds. The post is recognised for pre-registration.

Apply, with copies of 2 recent testimonials, to the Medical Superintendent, East Fife Hospitals Board of Management, 243A, High-street, Kirkcaldy.

WOLVERHAMPTON GROUP.

The Royal Hospital, Wolverhampton (an Associated Hospital of the University of Birmingham Medical School)

Pre-registration HOUSE OFFICER in Medicine. Post vacant 12th December, 1956.

Applications, with copies of testimonials, to Secretary.

WOLVERHAMPTON GROUP. Resident Surgical Registrar required. Duties first year mainly Royal Hospital, second year mainly New Cross Hospital. Candidates may visit hospitals.

Application forms obtainable from Group Secretary, Royal Hospital, Wolverhampton, to be returned by 3rd December, 1956.

WOLVERHAMPTON. WOMEN'S HOSPITAL, Park-road West. (An Associated Hospital of the Birmingham Medical School.) (90 Beds—obstetric, gynæcology and premature baby.) HOUSE OFFICER or Pre-registration HOUSE OFFICER post, vacant 14th December, 1956. Recognised for M.R.C.O.G.

Apply Secretary with copies of testimonials.

WORCESTER ROYAL INFIRMARY. (213 Beds.) Senior HOUSE OFFICER (surgical) required for post which is Deputy to Surgical Registrar and offers good experience. Recognised for F.R.C.S. examinations.

Applications, with 2 names for reference, to the Secretary.

YORK COUNTY HOSPITAL. (General Hospital of 269 Beds with full Consultant staff.) CASUALTY OFFICER (with charge of orthopædic beds) required 10th December, 1956. Junior Hospital Medical Officer grade. Salary £775–£50–£1075 p.a., less £170 p.a. if resident. Recognised for F.R.C.S.

Applications, giving age, nationality, qualifications, experience and names of 2 referees, immediately to Group Secretary, York A and Tadcaster Hospital Management Committee, Bootham Park, York.

YORK. NABURN AND BOOTHAM PARK HOSPITAL. YORK A AND TADCASTER HOSPITAL MANAGEMENT COMMITTEE. A vacancy exists for a JUNIOR HOSPITAL MEDICAL OFFICER in Psychiatry at this Hospital of 630 Beds with an annual admission rate of over 550 (including Health Service, amenity and private categories). Preference will be given to applicants who wish to study for the D.P.M. and facilities for attending the appropriate courses at the University of Leeds are readily available. The Hospital has 2 branches, both undergoing structural and functional alterations and forming an integral part of the York Comprehensive Mental Health Service. The post may be resident or non-resident.

The Hospital may be seen by appointment with the Physician-Superintendent, Bootham Park, York, to whom applications should be addressed with details of career and the names of 3 referees.

NORTHERN IRELAND HOSPITALS AUTHORITY

Applications are invited for the following whole-time posts :—

(1) REGISTRAR in Anæsthetics at hospitals managed by the Belfast Hospital Management Committee.

(2) REGISTRAR in General Medicine at the Angio-cardiography Department of the Royal Victoria Hospital, Belfast.

(3) REGISTRAR in Psychiatry at Purdysburn Hospital, Belfast.

The terms and conditions will be in accordance with the application of the Spens report to Northern Ireland.

Applications to be made on a form obtainable (with further particulars) from the Secretary, Northern Ireland Hospitals Authority, 44–46, Queen-street, Belfast, and to be returned not later than 4th December, 1956.

ST. JOHN'S, NEWFOUNDLAND, CANADA. GENERAL HOSPITAL. (475 Beds.) The above Hospital invites applications from pre-registration or fully registered applicants for INTERNE posts commencing July, 1957 ; salary $2500 p.a., less $480 for maintenance. There is a full teaching programme. The Hospital is fully approved by the Canadian Medical Association for Interne training and also approved by the Royal College of Physicians and Surgeons in Canada for postgraduate training towards Certification. Transport to St. John's will be paid and on completion of 1 years service return fare to the United Kingdom will be provided.

Applications, with full details as to experience, age, &c., together with names of 2 referees, should be forwarded immediately to Dr. E. WILSON, Superintendent.

General Hospital, St. John's, Newfoundland, Canada.

U.S.A. TOLEDO HOSPITAL, 2142, North Cove-boulevard, TOLEDO, OHIO. INTERNS-ROTATING SERVICE of 12 months starting 1st July, 1957. Fully approved 450-Bed Hospital. Excellent training in various fields of medicine. Great Lakes Port City. Full maintenance for Interns. Apartments provided for families. Stipend $200 per month.

Write to Superintendent.

Public Appointments

DERBYSHIRE COUNTY COUNCIL. County Health DEPARTMENT. SENIOR MEDICAL OFFICER for Mental Health. Applications are invited from registered medical practitioners for this whole-time superannuable post. Experience in dealing with educationally subnormal children and mental defectives is necessary for carrying out the duties. The possession of a Diploma in Public Health or in Psychological Medicine would be regarded as an important additional qualification. Salary £1520–£50 (1) and £55 (7)–£1955 p.a. Car allowance.

Particulars and application forms obtainable from Dr. J. B. S. MORGAN, County Medical Officer, St. Mary's Gate, Derby, to whom they should be returned by 26th November, 1956.

EAST SUFFOLK COUNTY COUNCIL. Applications are invited for appointment of ASSISTANT COUNTY MEDICAL OFFICER (29/44ths) AND MEDICAL OFFICER OF HEALTH (15/44ths) for the Borough of Beccles, the Bungay, Halesworth and Leiston Urban Districts, and the Blyth and Wainford Rural Districts (total population approximately 43,000). Salary, based on current awards, will be between the minimum £1408 and the maximum £1800 p.a., rising to maximum by appropriate increments in accordance with the awards. Duties will include school medical inspection, maternity and child welfare work and general public health. D.P.H. essential and previous local authority experience an advantage. Superannuable appointment, subject to satisfactory medical examination, and to provisions of Sanitary Officers (outside London) Regulations, 1935. Car allowance on approved national scales.

Forms of application and further information obtainable from the County Medical Officer, County Hall, Ipswich, to whom all applications should be returned not later than 24th November, 1956.

G. C. LIGHTFOOT, Clerk of the County Council.

FACTORY DOCTORS. Factories Acts, 1937 and 1948. The following appointments as Appointed Factory Doctor are vacant. Apply to Chief Inspector of Factories, 19, St. James's-square, London, S.W.1.

District	*County*	*Latest date for receipt of applications*
BOSTON..	.. LINCOLN	.. 1ST DECEMBER, 1956
GIRVAN..	.. AYR ..	.. 1ST DECEMBER, 1956

GOVERNMENT OF NORTHERN RHODESIA. Medical OFFICER required for Silicosis Medical Bureau. Duties include clinical and radiological examination of miners (European and African). Officer will be stationed at Kitwe and will work under supervision of Chairman (a Medical Specialist) of the Silicosis Medical Bureau. Kitwe is a town of considerable size with agreeable climate and many social amenities. Post offers excellent opportunity for experience in diseases of chest and research in pneumoconiosis. Appointment can be on permanent basis with pension, or short-term contract with gratuity (taxable). Candidates in National Health Service may leave but retain their superannuation rights (up to 6 years) and receive a gratuity (taxable) of 20% of aggregate of salary at end of engagement. Salary scale from £1245 to £2030 a year, starting salary depending upon age and experience. Pension for permanent appointment at rate of 1/600th of final pensionable emoluments for each completed month of service. Gratuity for contract appointment is £37 10s. for each completed 3 months of service. Free passages are provided in both directions for Officer and wife, and assisted passages for children. Housing available and married candidate may be accompanied by family. Candidates (Male only) should be between 25 and 35 years of age, possess medical qualifications registrable in the United Kingdom and have had at least 12 months postgraduate experience.

Application forms from Director of Recruitment, Colonial Office, London, S.W.1 (quoting No. BCD.117/3/02).

HER MAJESTY'S OVERSEA SERVICE. Kenya. Medical OFFICERS with qualifications registrable in United Kingdom required for general duties. Successful candidates may be posted to any station in Kenya. During earlier years of service an officer will be expected to carry out general medical and surgical duties including varying amount of public-health administration. In most stations, even if remote from the larger towns, it is possible to maintain interest in any particular branch of medicine or surgery, to which the officer is attracted. The work of every medical officer is based on a hospital which may vary in size and facilities from small district hospital, meeting needs of comparatively primitive community, to large and modern provincial hospital. Appointments can be made on permanent basis with pension (non-contributory), or on short-term contract with gratuity (taxable) payable on satisfactory completion of service. Normal retiring age is 55. Salary ranges from £1284 to £2115 a year, starting point determined by experience. 4 extra increments given to successful candidates possessing the F.R.C.S., M.R.C.P., D.P.H., or other approved higher qualifications. Permanent Medical Officers are eligible to be considered at any time for promotion to super-scale posts in Kenya and other territories in medical administrations or, if they possess higher qualification and suitable experience, in specialist posts. Quarters at rental varying from £30 to £78 a year according to size and type, and furniture at rate varying from £15 to £36 a year. Free passages in both directions for Officer and wife and up to cost of 1 adult fare for children. Taxation at local rates. Annual local leave permissible and generous home leave granted after each tour of from 24 to 45 months. Educational facilities available.

Application forms from Director of Recruitment, Colonial Office, Great Smith-street, London, S.W.1 (quoting No. BCD. 117/7/02).

NATIONAL COAL BOARD. Durham Division. Area MEDICAL OFFICER (No. 4 (South West Durham) Area at Coundon, Bishop Auckland). Applications are invited from registered medical practitioners for the above appointment to the Board's Medical Service. The successful applicant will be required to reside within the Area. He should preferably be under 40 years of age. Special experience and additional qualifications will be considered in assessing commencing salary within the range £1400–£2150 p.a. Previous experience in general practice or preventive medicine will be an advantage. The duties include all aspects of industrial medicine from pre-employment examination to rehabilitation and supervision of medical centres and first-aid rooms, staffed by State Registered Nurses and first-aid attendants. Frequent visits underground will be necessary. The Board has its own X-ray facilities.

Applications, quoting reference EV.127/24, giving date of birth, qualifications and experience in chronological order, and naming 2 referees, should be sent within 14 days of publication to Divisional Chief Staff Officer, National Coal Board, Durham Division, Staff Department, 7, Side, Newcastle upon Tyne, 1.

NORTHAMPTONSHIRE. Applications are invited from registered medical practitioners holding a D.P.H. for the appointment of DISTRICT MEDICAL OFFICER OF HEALTH for the Borough of Daventry and the Rural Districts of Brixworth and Daventry AND ASSISTANT COUNTY MEDICAL OFFICER OF HEALTH for the same area. The Officer will act under the County Medical Officer of Health as Assistant County Medical Officer. The salary scales are (i) for the post of Medical Officer of Health for the District Councils : £920–£1030 p.a., and (ii) Assistant County Medical Officer : £656–£922 p.a. A travelling allowance will be paid on the scale from time to time approved by the County Council. Office accommodation and clerical assistance will be provided. The appointment is subject to (*a*) the Local Government Act, 1933, and the Sanitary Officers (Outside London) Regulations, 1935 and 1951, (*b*) the Local Government Superannuation Acts, and (*c*) the passing of a medical examination. The Officer will be required to devote his whole time to the duties of the appointment, to reside within the area for which he acts and to discharge the obligations imposed on a District Medical Officer of Health by the relevant Acts, Orders and Regulations. As regards the duties of District Medical Officer of Health, the Officer will be subject to the control and direction of the several Councils. The appointment will be determinable upon 3 months notice on either side.

Applications, stating age, qualifications and experience, with the names of 3 referees, should reach the Clerk of the County Council by 26th November, 1956.

J. ALAN TURNER, Clerk of the County Council.

County Hall, Northampton.

NOTTINGHAMSHIRE COUNTY COUNCIL. Applications are invited for the appointment of SENIOR ADMINISTRATIVE MEDICAL OFFICER (Male) from duly qualified and registered medical practitioners who hold a Diploma in Public Health. The post is third in seniority in the Department which is responsible for the central administration of the Public Health and School Health Services of the County. Applicants should have had clinical and administrative experience in general public health work and in connection with the School Health Service. Experience of County work, though not essential, will be an advantage. Salary £1570 p.a.–£50–£1620 p.a.–£55 p.a.–£2055 p.a. Within this scale the County Council are prepared to take into consideration the existing salary and circumstances of the successful candidate in assessing his commencing salary.

Application forms and conditions of appointment are obtainable from me, and completed applications must be returned by 8th December, 1956.

A. R. DAVIS, Clerk of the County Council.

Shire Hall, Nottingham.

PRISON AND BORSTAL SERVICE. Male Occupational THERAPIST (in sole charge). Applications are invited for a post at H.M. Prison, Wakefield. Applicants must be fully qualified. The accepted candidate will be required to initiate and organise an occupational therapy unit under the direction of the Principal Medical Officer. The unit will handle selected male prisoners suffering from psychopathic deviations mainly of a mild kind and will form part of the existing psychotherapeutic centre at Wakefield Prison. Salary £520 10s.–£15–£580 10s. p.a. (National Health Service scale). Pensionable under the Health Service superannuation scheme. An abatement of £15 will be made in the starting salary for every year or part of a year by which a candidate's experience falls short of 3 years.

Regulations and application forms from the Establishment Officer (E.76/2/1), Prison Commission, Horseferry House, Dean Ryle-street, London, S.W.1, to be returned by 30th November, 1956.

WEST BROMWICH. COUNTY BOROUGH OF WEST BROMWICH. Applications are invited from registered medical practitioners for the post of ASSISTANT MEDICAL OFFICER OF HEALTH AND ASSISTANT SCHOOL MEDICAL OFFICER. This post affords an excellent opportunity of acquiring extensive experience in maternity and child welfare, school clinic work and other general duties of a Public Health Department. Possession of the D.P.H. or D.C.H., though not essential, would be an advantage. Salary £1050–£1475 p.a. and car allowance. Post superannuable, subject to medical examination and 2 months notice.

Applications, with full particulars of experience and names of 3 referees, should be sent to the undersigned by 6th December, 1956.

Town Hall, West Bromwich. J. M. DAY, Town Clerk.

DIRECTOR OF OCCUPATIONAL HEALTH

required by the

SASKATCHEWAN DEPARTMENT OF PUBLIC HEALTH

Salary : $828–$994 per month

Duties : To organise and administer a new programme in occupational health ; to conduct industrial hygiene surveys, and establish control measures for industrial hazards ; to initiate research projects and provide educational and technical information services ; to promote health maintenance programmes for workers.

Requirements : Graduation from an approved Medical School and some experience in the practice of medicine ; possession of a Diploma in Industrial Health with some successful experience in this field.

Benefits : 3 weeks annual vacation with pay ; 3 weeks sick leave, accumulative with pay ; suitable superannuation scheme.

Closing date : As soon as qualified applicant is obtained.

For application forms or further information, contact the Public Service Commission, Legislative Building, Regina, Saskatchewan, Canada ; or write to the Personnel Officer, Department of Public Health, Provincial Health Building, Regina, Saskatchewan, Canada.

WARWICKSHIRE COUNTY COUNCIL. County Medical OFFICER OF HEALTH'S DEPARTMENT. Applications are invited from registered medical practitioners for the permanent appointment of ASSISTANT COUNTY MEDICAL OFFICER OF HEALTH (Male or Female). Preference will be given to those holding the D.P.H. or D.C.H. and with previous experience. Conditions of service and salary (£1050–£1475) will be in accordance with the Whitley Council. The successful candidate will be required to provide a motor-car in the performance of duties, for which Whitley Council scale allowances are payable.

Further particulars, including details of area and duties, and application forms may be obtained from the County Medical Officer of Health, Shire Hall, Warwick. Closing date for applications is 10th December, 1956.

L. EDGAR STEPHENS, Clerk of the Council.

Shire Hall, Warwick, 31st October, 1956.

General Practice

For an Executive Council post (England and Wales) apply on form E.C.16A *obtainable from the council. Mark envelope "Vacancy."*

PATCHWAY, GLOUCESTERSHIRE (near Bristol). Applications invited for VACANCY (mainly urban) owing to death. List approximately 1100. House, including surgery accommodation, probably available. Form of application and further particulars obtainable from the undersigned, to whom applications should be returned not later than 7 days from the date of publication of this advertisement.

W. J. T. LITTLE, Clerk,

Gloucester County and City Executive Council.

12, College-green, Gloucester.

Hospital Services : Non-Medical Appointments

CATERHAM, SURREY. ST. LAWRENCE'S HOSPITAL. BIOCHEMIST (graduate) basic grade, required urgently for research work in problems of metabolism in mental deficiency. Experience in and knowledge of chromatographic methods would be an advantage. Temporary appointment for a year in the first instance. Salary according to qualifications and experience (minimum £475) and conditions as laid down by Whitley Council for Health Services.

Apply, giving names of 2 referees, to Physician-Superintendent.

SMETHWICK, STAFFORDSHIRE. MIDLAND CENTRE FOR NEUROSURGERY, Holly-lane. Applications are invited from suitably qualified candidates for the post of BIOCHEMIST (Senior grade). The applicant appointed will work under the Pathologist and will be responsible for the routine biochemical investigation of patients and assisting in developing neurochemical research. The Department may be visited on application to the Pathologist at the Centre. Salary in accordance with Whitley Council scale rising to a maximum of £1230 p.a.

Applications, together with the names and addresses of 2 referees, should be sent to the Hospital Secretary not later than 10th December, 1956.

Miscellaneous

Medical Referee. The Craigton Crematorium Company Limited wishes to appoint under Regulation 10 of the Cremation (Scotland) Act, 1935, a Medical Referee for its Crematorium now under construction with Registrar's Office at the address below.—Applications from suitably qualified persons, giving particulars of age, experience and qualifications, should be forwarded to the Secretary, 24, George-square, Glasgow, C.2, from whom further particulars can be obtained.

India. Medical Officer required for tea garden practice in Western Dooars. Initial engagement for 3 years. Starting salary approximately £1440 with additional dearness, servant and transport allowances, rent-free bungalow, regular leave on full pay in U.K. with first-class fares paid. Appointment continuing on progressive terms under agreements.—Write, giving full details of qualifications and experience, to : Box ZY.681, DEACON'S ADVERTISING, 36, Leadenhall-street, London, E.C.3.

For sale. Shrewsbury. Occupying one of the most beautiful positions in the town, a 16-roomed residence completely modernised and for some years used as a high-class home for elderly people. Gross income £60–£70 per week. Suitable for doctor or qualified nurse. Price £10,000. £4000 may remain on mortgage.—Apply : WISEMAN & POOK, F.A.I., Eagle House, Barker-street, Shrewsbury.

For Sale, owing to death, lease of Harley-street premises fully equipped with latest radiological diagnostic equipment, dark-room, fully furnished, terms to be arranged.—Write : Box 986, REYNELLS, 44, Chancery-lane, W.C.2.

"Pregnancy Diagnosis by the Xenopus Method," 24-hour service. Send specimen of urine and £1 1s. fee. Hæmatology, Biochemistry, Flame Photometry.—WELBECK BIOLOGICAL LABORATORIES, 26, Park-crescent, Portland-place, W.1 (MUSeum 5386–7).

Applicants for posts requiring testimonials copied or duplicated should communicate with MANTON SECRETARIAL SERVICE LTD., 98, Victoria-street, S.W.1 (Phone : VICtoria 0141), who are specialists in this kind of work.

Typewriting and Duplicating. First-class work at moder-ate prices by experienced medical typists. Electric machines. —SYBIL RANG, 21, Heath-street, Hampstead, London, N.W.3 (HAM 5329/0504).

Hypnotism. Will all doctors interested in this subject for Medical purposes please write to the Secretary, British Society of Medical Hypnotists, 126, Harley-street, W.1.

Medical examination couch for sale, good as new.—Ring ACOrn 1743.

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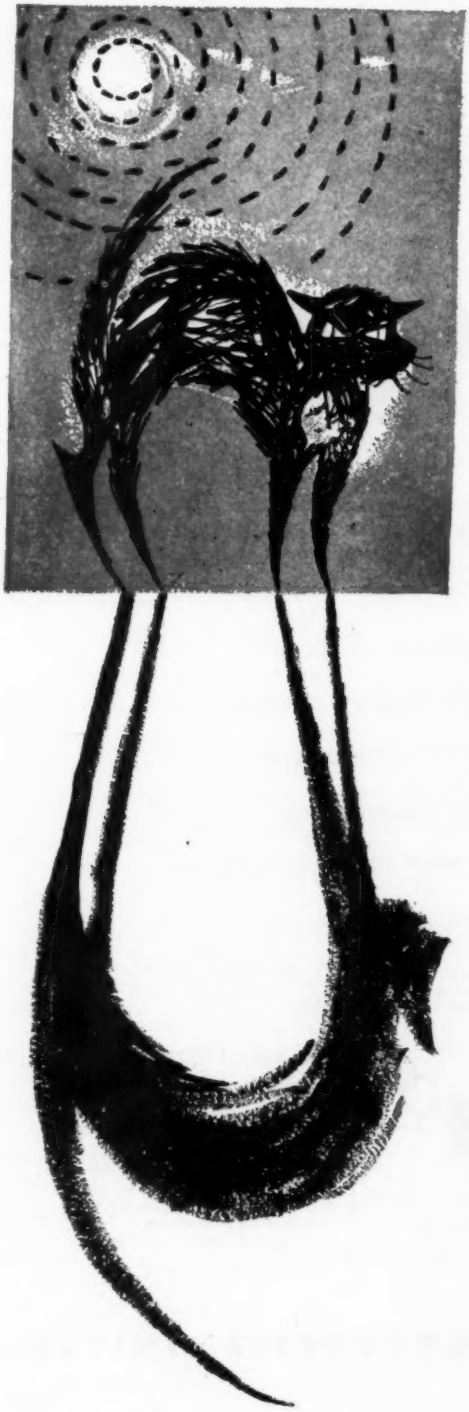

night cough

SYRUP CALCIDRINE, combines the expectorant effect of iodine, the sedative action of Nembutal and codeine and the antispasmodic action of Nembutal and ephedrine. It can be prescribed to great advantage in the treatment of bronchial infections with troublesome night cough. Symptomatic relief will be obtained in those cases of acute and subacute bronchial infections, especially where night cough persists. Considerable success has been obtained by the use of SYRUP CALCIDRINE in the relief of spasms in whooping cough. The continued use of SYRUP CALCIDRINE is contraindicated in certain cases of thyroid disease where the physician may wish to avoid the administration of an iodine preparation.

Syrup Calcidrine
REGD.

SYRUP CALCIDRINE is supplied in 4 fl. oz. bottles. Each fluid ounce contains:—

Calcium Iodide, B.P.C., 1934	*7 grs.*
Ephedrine Hydrochloride, B.P.	$\frac{3}{32}$ *gr.*
Codeine Sulphate, B.P.C., 1934	$\frac{1}{4}$ *gr.*
Nembutal (Pentobarbitone Sodium, B.P.)	$\frac{3}{8}$ *gr.*
Alcohol, B.P.	*28 min.*
Syrup of Tolu, B.P.	*36 min.*
Syrup of Wild Cherry	*115 min.*

DOSE:—Adults, 1 or 2 teaspoonfuls every 2 to 4 hours. Infants six months to one year ½ teaspoonful. Children 5 to 12 years ½ to 1 teaspoonful.

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